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Volume 92 Number 18

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

WHEN an industry doubles its rate of production within a month, that is coming back fast. Steel did it in April, opening the month with capacity engaged 14-15 per cent and closing at 29 per cent (p. 19). Of course, May cannot be expected to repeat the performance, and some of the initial impetus of the upswing has been lost, but further gains are likely. Because some mills have been picking semifinished material off stockpiles, consumption probably has more than doubled.

Industry's Shelves Are Bare

As their requirements expand, iron and steel consumers naturally look to their reserves, which may represent speculation against rising prices or a cushion against any interruption of supply. A painstaking survey of inventories discloses (p. 13) a very narrow margin of safety. Assuming 1924-28 to be average, or 100, mill and jobbers' stocks now are only 59, manufacturers' stocks 40, manufacturers' inventories of their finished products 43. Only primary producers' reserves of raw materials, such as iron ore, are above the 1924-28 level.

Corner Is Turned, Financially

From an expected tendency to build up inventories as well as from current requirements, producers look for volume that will turn the corner for them financially. First-quarter statements are so much water over the dam, in view of subsequent improvement, but even so are not wholly discouraging. Nine leading producers of iron and steel, representing 82 per cent of the country's capacity, lost less than in the fourth quarter of 1932 (p. 17). Again, National was alone in this group "in black."

Auto Production Now in High Gear

Automobile manufacturers continue to lead all consumers of iron and steel, releases for May being proportionate (p. 21) to a scheduled production of over 200,000 units, the most since July, 1931. . . . At the bottom are structural steel awards (p. 50), though the forthcoming placing of 187,000 tons for the San Francisco bay bridge (p. 59) will help close the gap. . . . While pig iron (p. 53) and scrap (p. 55) present a boiling market, prices also bid for the spot light. All hot and cold-rolled sheets, strip and ferroalloys have been advanced this week (p. 43). . . . Europe, however, reports a slightly easier market situation (p. 59), partly due to the Easter holidays. . . . Forget Europe, look to the Orient, Africa, Latin America for future foreign trade, is the advice (p. 25) at the National Foreign Trade council convention.

Washington Hears From the Country

Industry, meanwhile, is keeping one eye on Washington (p. 20). First feeble protests

Steel's most spectacular exhibit in the East—the George Washington bridge at New York—is threatened with competition from a new Hudson river tunnel, which the R. F. C. is to finance

against the 30-hour work week have reached the proportions of a roar, with Secretary Perkins proposing as a substitute more flexible control of industry. Hearings have begun on an I. C. C. investigation of freight rates, and the treasury has decided there is no evidence of France dumping cast iron pipe here. . . . National Machine Tool Builders' association, meeting at Cleveland (p. 22), among other things is setting its house in order to combat any government inroads and to present its case convincingly.

Changing Times, Changing Institute

Corridor gossip at the spring meeting of the American Iron and Steel institute in New York, May 25, will be seriously curtailed if the secretariat succeeds in holding members for the economic discussions which are to follow Chairman Schwab's epigrammatic curtain raiser (p. 18). Technical papers will be limited to three, at the afternoon session. . . . Four days of technical sessions, interlarded with visits to the Century of Progress exposition and exhibits of foundry equipment and products, are scheduled (p. 34) for the June convention of the American Foundrymen's association at Chicago.

Electroplating Extends Its Horizon

For decorative purposes or as a barrier to corrosion, electroplating finds increasing favor (p. 29). Whatever the metallic coating preferred, certain fundamental principles governing plating must be observed, such as choice of deposit, specifications, depth of recesses, shape of inside corners, shielding of areas, gas pockets, draining, racking and stability of the solution. . . . Such protection and decoration is inbuilt in chrome nickel silver, newest of composite metals (p. 34). Consisting of a nickel-silver sheet bonded to chromium by a special process, this material has the appearance of chromium and is intended for use in conjunction with chromium-plated fixtures.

Poor Uptake Design Reflected in Cost Sheets

Combustion conditions and fuel economy in the operation of open-hearth furnaces depend, in surprising degree, upon the velocity of incoming air into the furnace throat, this velocity being governed (p. 35) by the design of the air uptake area. . . . A new method of reeving rope on the main hoist in open -hearth departments (p. 40) not only lengthens the campaign of the rope three to five times but also prevents spillage of hot metal while ladles are being transferred from standards to pouring bay. . . . A 45-foot diameter steel sphere was recently erected near St. Louis (p. 34). Shell plates were formed and edged in the shop, hoisted in position by a derrick, and all seams welded.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

A Clean Cut Plan for Railroad Relief

To the Editor, STEEL:

Public interest in the railroads revolves around the need for efficient transportation at low cost, together with proper protection of capital invested by the people. These are not conflicting interests, but when it becomes more universally understood that capital, in reality, is stored labor in which we all have a vested interest, we will be in a position to make progress in removing obstacles in the path of recovery.

Just as capital, labor and management are beginning to realize more fully their inter-dependence, so all the various groups comprising economic life must concede a community of interest. No single group can prosper permanently by the imposition of an unbearable burden upon society, even though sanctioned by government. Neither will a policy succeed that permits a nickel in hand to obscure the possibility of earning a dollar in the future. In short, the selfishness of one group or any combination of groups must not be permitted to stand in the way of re-habilitation for all other groups.

The one idea in general circulation seems to suggest a radical revision in capital structure of the railroads as the only way out of a bad mess. This should become necessary only as a last resort. It is wrong in principle to temporize with the situation until financial reorganizations in increasingly large numbers become imperative, with consequent loss to investors. Such capital loss is irrecoverable to the investor, but this same capital will continue to serve the railroad and the public. Improvements and additions have been financed in large part from proceeds of bond issues rather than from current earnings. It is safe presumption that the same need will arise again and if the railroads choose to follow this dishonest course of bond repudiation, they will find no buyers for their securities in the future.

As an alternative, there is a just and logical procedure available to the railroads which inflicts no undue hardship on any class. If carried out intelligently, it will place most railroads on a sound footing, provide funds for renovation of their rolling stock and repairing of roadbeds, bridges and buildings; also enable them to meet their interest requirements. This plan calls for cutting loose from the apron strings of the interstate commerce commission, a 25 per cent reduction of freight rates, a consolidation into 17, or at the most, 19 major systems; permission to operate small units on side lines with skeleton train crews, drastic reduction in salaries of presidents and other high administration officers, temporary reduction of all wages in line with present level of dollar purchasing power, and a concerted drive to reclaim part of the business lost to competing agencies.

Since there is much more satisfaction in the possession of a live bond than one in default, bondholders should not be averse to acceptance of an interest rate of 3½ per cent on present holdings for a stated period not exceeding three years. Unless all interests, including the public, are willing to seek a common ground of compromise, settlement must come through legislation.

No good will result from nibbling at the rate structure by five or ten per cent reductions. A 25 per cent reduction will effect a new lease of corporate life for the railroads, and will revive mining, manufacturing and agriculture. In fact, it will provide a greater benefit for the steel industry and agriculture in particular, than all the legislation "hokum" of the past ten years or in prospect at this time.

Alliance, O. L. W. RANDOLPH

Low Stocks Will Quicken Industry's Response To Increased Buying

IF, LIKE Mother Hubbard's cupboard, all the stores, warehouses and stockpiles which carry industry's inventories were bare, a prospective purchaser of an article as inconsequential as a penknife would have to wait until his order flowed from the hardware store to jobber, knife manufacturer, steelmaker, pig iron producer, and finally to the iron ore mine before the steps necessary in making the knife could begin.

On the other hand, if industry's inventories were large, a purchaser could order a dozen battleships or several hundred thousand railroad cars without being subjected to unreasonable delay in the delivery of the necessary materials.

Cushion Fluctuations in Demand

Inventories are cushions which ease the shocks of fluctuating demand. The condition of inventories —all the way from the retailer back to the mines—determines the extent and speed with which a spurt or decline in buying affects the jobbers, manufacturers, producers, etc. in the nation's industrial structure. Therefore, a study of the status of current inventories should throw light on the probable effect of the present buying movement upon the numerous companies engaged in production, fabrication, manufacture and distribution of materials, supplies and products required for articles of iron and steel.

♦ ♦ ♦

Anticipating that reopening of the banks would release interrupted demand and that the condition of industrial inventories would assume greater significance in the ensuing expansion of buying, STEEL in April undertook a survey of the various inventories involved in the production and consumption of iron and steel. Eight editors of STEEL's staff collected information from representative producers, fabricators and manufacturers. The results of this study may be summarized as follows:

1. The ultimate consumer of articles in which iron and steel predominate needs more of such articles than he now has in his possession. He has been skimping on his actual requirements.

2. Manufacturers' sales and distribution inventories of these articles in April were at only 43 per cent of the average for April in the 5-year period 1924-1928.

3. Manufacturers' stocks of iron and steel used in the manufacture of these articles in April were at 40 per cent of the 5-year average.

4. Steel mill and jobbers' inventories of finished iron and steel for distribution to these manufacturers in April were at 59 per cent of the 5-year average.

5. Inventories of metallurgical materials used in the production of iron and steel are on a par with or in excess of the average inventories of the 5-year period.

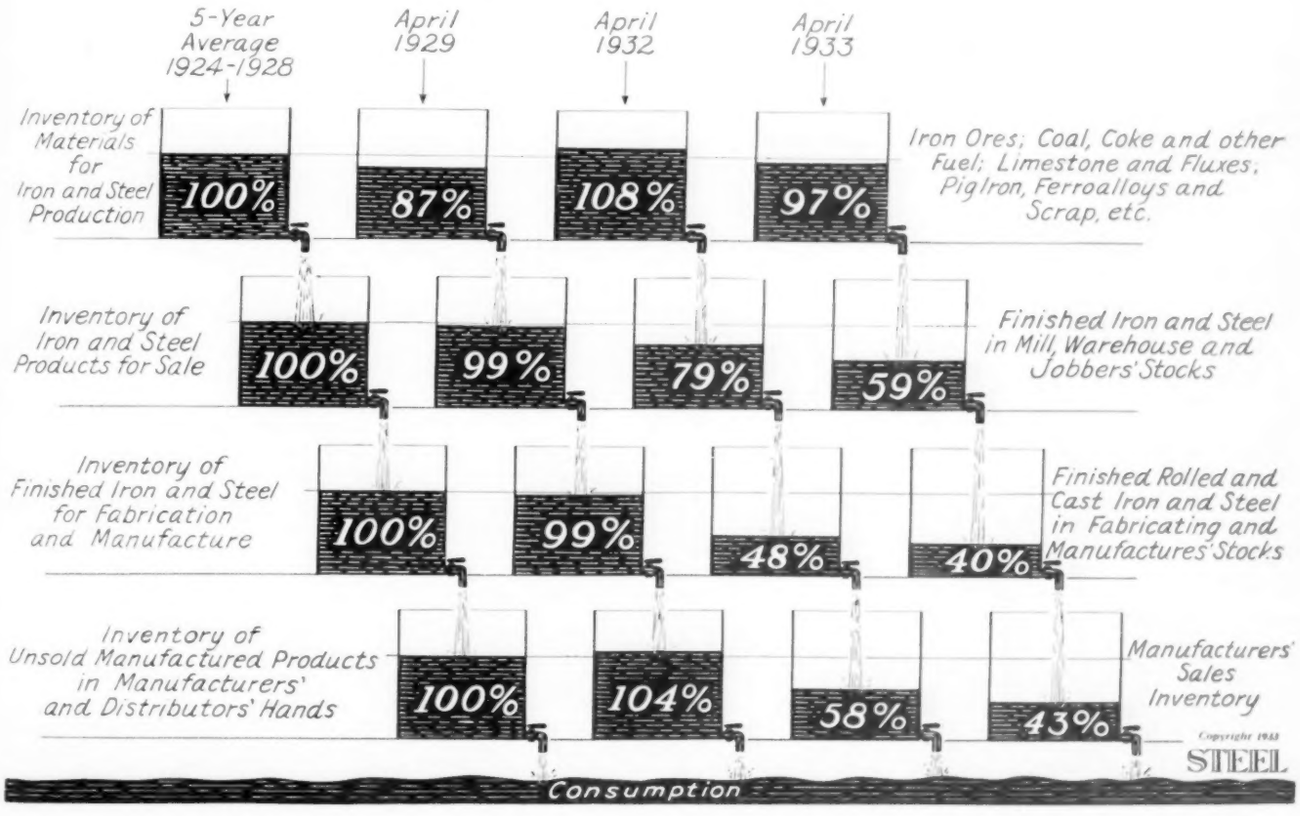
6. In general, depletion of stocks is greatest among the ultimate consumers and diminishes progressively in each link of the chain back to the mine.

♦ ♦ ♦

1. Consumers' Need for Manufactures of Steel

Conclusion No. 1 is based upon the studies made and published* by STEEL last fall. At that time it was shown that requirements had accumulated for automobiles; implements and the other farm needs of steel; railroad power, rolling stock, track equipment

*See analyses of steel demand: Per capita, issues of July 4 and 18, 1932; agriculture, July 25; automotive, Aug. 1; railroads, Aug. 15; oil, gas and water, Aug. 29; building, Sept. 12, 1932.



and supplies; oil, gas and water services; etc.—which requirements were not being fulfilled because of unwillingness to purchase in the face of financial difficulties and the absence of public confidence.

The unsatisfied demand has not diminished since last fall; on the contrary, in the absence of buying, it has mounted. Deflation in the six months immediately preceding April 1, 1933, was more acute than in any previous period of the depression, and its effects cut deeply into the already low "inventory" of manufactured articles of steel in consumers' hands.

TABLE I

Summary of Industrial Inventories

IN PERCENTAGE OF 5-YEAR AVERAGE, 1924-1928

Type of Inventory	April 1, 1933	April 1, 1932	April 1, 1929	5-year Average Apr. 1, 1924-'28
Metallurgical materials for production of iron and steel	97	108	87	100
Finished iron and steel in mills, warehouses and jobbers' hands	59	79	99	100
Finished iron and steel in fabricators' and manufacturers' stocks	40	48	99	100
Manufactured articles in manufacturers', distributors' and dealers' hands	43	58	104	100

Where Steel Went in 1932

STEEL's annual compilation of the consumption of finished steel (P.62, Jan. 2 issue) showed the following distribution:

	% of Total	Tons
Automotive	18.15	1,721,971
Buildings	16.38	1,554,043
Containers	10.79	1,023,695
Railroads	9.09	862,408
Oil, gas, water	5.50	521,809
Machinery	3.39	321,624
Exports	3.31	314,034
All other	33.39	3,167,856
Totals	100.00	9,487,440

Of these principal consuming fields, automotive and 'all other" are leading in the present revival of buying. These two groups are more directly responsive to public purchasing power than the railroad, building and service groups. Money made in beer or on the stock market or released from closed banks may easily be spent for an automobile by a man who has been deprived of a car throughout the acute stages of the depression. Consumption included in "all other" responds quickly to improved conditions because the small manufacturers, being more flexible than larger competitors, reduced their stocks more drastically during the latter stages of the depression.

The railroads still are buying little, but as shown in STEEL in the Jan. 2 issue, they "will be compelled to spend at least half a billion dollars annually for additions and betterments as soon as confidence and credit are restored." This reservoir of demand still overhangs the market, awaiting release.

Building awards improved slightly in March, but the demand for steel from this source still is negligible compared to what it will be when legal obstacles to slum elimination are removed and when increased employment enables the public to reverse the "doubling-up" of families in single quarters. Financial stringency has prevented municipalities from installing needed gas and water improvements. Oil companies have been withholding projects until business conditions clear. Activity in the container field is encouraging. The advent of beer, and other developments promise to expand consumption of tin plate.

This superficial resume of the needs in the principal consuming fields indicates that the situation obtaining last fall still exists, namely, that the needs of the nation for steel have not been satisfied and that only the lingering traces of fear and uncertaintly have barred a resumption of brisk buying.

• • •

2. Sales Inventories of Manufactured Articles

In what position are manufacturers to supply the demand for manufactured articles of steel, such as automobiles, refrigerators and other household appliances, motors, ball and roller bearings, agricultural implements, containers, machine tools, equipment, etc.?

According to the evidence revealed in STEEL'S study of the sales inventories of a score of the largest consumers of steel, present stocks in the hands of manufacturers and their distributors are only 43 per cent of the average for April 1 in the five years from 1924 to 1928, inclusive.

Consider the automobile industry, for example. In 1929 and for several years previous to it, it was not uncommon for dealers to carry a 3-months' stock of cars. Even a year ago many dealers carried sufficient cars for sales over a period of 45 days. But in April, 1933, the average dealer had only a few models—a number that would have been considered only sufficient for display purposes in 1929. Today production and sales are synchronized more closely than at any time since the earliest days of motor car development.

Manufacturers of household equipment such as electrical refrigerators, washing machines, ironers, stoves, kitchen cabinets, radios, etc. have not felt the depression as acutely as many other manufacturers. Refrigerator sales, particularly, have held up fairly well. In spite of this fact, the sales inventories of companies manufacturing household equipment now are only about 60 per cent of the 5-year average. They have been cut about 30 per cent in the last year, reflecting the effect of the acute period of the depression.

Stocks Critically Depleted

In agricultural implements, sales inventories have not been reduced drastically, in spite of the farmers' sorry plight. Stocks probably average about 75 per cent of the 5-year mean. In manufactured products for industrial use, such as antifriction bearings, pulleys and other transmission appliances, industrial motors, etc., sales inventories are at critically low ebb. Inventories at less than 10 per cent of the 1924-198 average are not uncommon. In fact, the inability of manufacturers of certain products to fulfill orders promptly has necessitated a change in the policies of purchasing agents, some of whom are increasing the size of orders in order to build up their own inventories for self protection. This is a good illustration of the accumulative effect of hand-to-mouth buying in a period of expanding demand.

Manufacturers of bolts, nuts, rivets, set screws and screw machine products have cut their sales inventories ruthlessly in the last two years. Several representative companies show inventories at less than 50 per cent of the 5-year average level. On the other hand, one important manufacturer of products in this classification shows a current sales inventory of 113 per cent of the 5-year average.

In summary, it may be said that the 43 per cent figure shown is conservatively high. The majority of returns were from large manufacturers whose inventories for 1933 were

consistently higher than those of the smaller companies, a few of which were questioned in order to check the results from the larger establishments. We believe a dragnet survey of all companies, including the great number of smaller ones, would force down the percentage from 43 into the middle thirties.

• • •

3. Inventories of Materials For Manufacturing

Are manufacturers sufficiently stocked with rolled steel, castings, and other necessary materials to meet increased demand for their products promptly?

The answer, according to STEEL'S study of manufacturing inventories is "no." A survey, based on returns from larger manufacturers, indicates that present stocks are only 40 per cent of their average level during the period from 1924 to 1928. In order to give a general idea of manufacturing inventories, a few items were selected at random and are presented in Table II. A great diversity in practice is indicated. Inventories as of April 1, 1933, range all the way from 1 per cent to 140 per cent of the 5-year average.

This is explained by the contrasting conditions in various lines of manufacture. Some equipment builders, and particularly railroad car and locomotive companies, have reduced inventories to almost zero. On the other hand a number of machinery manufacturers whose products are in active demand report inventories of more than 100 per cent of the boom period.

TABLE II

Typical Manufacturing Inventories

(In Tons, Unless Otherwise Noted)

	Apr. 1, 1933	Apr. 1, 1932	Apr. 1, 1929	5-yr. av., 1924-1928
Steel bars	150	375	2,800	2,350
Hot rolled steel	400	450	41,000	37,500
Hot rolled steel	1,400	1,355	1,300	1,000
Hot rolled steel	1,127	1,745	6,085	4,564
Cold r. bars	165	88	718	539
Cold r. strip	200	750	1,100	870
Sheets	1,135	2,342	5,135	4,201
Tool steel	30	38	94	89
Pig iron	345	1,195	2,061	1,750
Scrap	69	272	1,040	850
Coke	115	150	277	250
Castings, steel	60	69	510	500
Nonfer. metal	5	6	305	225
Steam coal	319	360	1,230	790
Bolts, dollars	450	415	3,900	3,500
Bolts, %	23	24	27	100
Bolts, %	42	42	45	100
Rivets, dollars	320	395	3,200	3,025
Rivets, %	16	17	8	100
Nuts, %	54	55	64	100

• • •

4. Inventories of Iron and Steel for Sale

To what extent are steel mills, warehouses and jobbers prepared to meet the present spurt in buying?

A careful check indicates that steel sales inventories are down to 59 per cent of the average for 1924 to 1928. This figure is derived from confidential reports from a number of the leading steel producers and from half a dozen important warehouse interests, and has been checked against the inventory reports of steel companies which reveal detailed inventories in their annual balance sheets.

The total inventories reported in balance sheets by leading steel producers are shown in Table III. These totals include raw materials, supplies, etc., as well as semifinished and finished products and material in transit. In dollar values (lower of cost or market) inventories have been reduced from 100 per cent as of the average on Dec. 31 for the five years of 1923 to 1927 to 93 per cent at the end of 1928, 94 per cent in 1931 and 79 per cent at the end of 1932.

However, these reductions were not made uniformly in sales and material inventories. Detailed figures on the basis of inventories of April 1, 1933 (or approximately that date) show that iron and steel sales stocks were at only 59 per cent of the 5-year average, having been reduced to 99 and 79 per cent, respectively, as of April 1, 1929 and April 1, 1932.

Here again a wide divergence in practice is revealed. Most of the warehouse inventories have been reduced approximately in parallel with the foregoing figures. One mill interest reports its stocks of finished steel as practically negligible. It states that for months it has been

Results Are Qualitative

In the accompanying article, STEEL presents a study of industrial inventories based upon reports from representative producers, fabricators, distributors and manufacturers.

The conclusions are qualitative rather than quantitative. The results obtained from returns from typical large manufacturers, checked with those from a limited number of companies of medium and small size, afford a picture which probably is as indicative of the true condition of sales and manufacturing inventories as if data had been secured from thousands of establishments.

This study embraces only materials for iron and steel production, materials and parts for manufacturing, and manufactured articles. In an early issue a study of inventories of equipment, supplies, etc. for plant maintenance and rehabilitation will be presented.

THE EDITORS

rolling only on specifications. In contrast to this condition are many of the diversified producers which are obliged to maintain stocks for distributors, their own warehouses and in some cases, steel on consignment.

A similar situation exists in relation to stocks of pig iron for sale. One merchant interest which has cut its supply drastically in the last year, still has more tonnage than in April, 1929. But of the current stocks, certain silicon grades are almost exhausted. Another furnace interest which normally consumes part of its iron and sells the remainder, has practically no stock at the present time.

In general, the sales inventories of iron and steel are such that a continuation of the current buying movement must be reflected promptly in increased operations. The reservoir is too low to permit much cushioning of increased demand.

• • •

5. Inventories for Production of Iron and Steel

Are iron and steel producers fortified with sufficient stocks of metallurgical materials to meet a moderate-to-brisk rise in demand?

The answer is "yes." The leading steel companies have stockpiles which are only slightly smaller than they were in the years from 1924 to 1928. In aggregate, they are actually larger than in the good production year of 1929. In terms of the 5-year average, stocks of metallurgical materials (ore, fuel, limestone, pig iron, ferroalloys, scrap, etc.) were 87 per cent on April 1, 1929, had jumped to 108 per cent in April 1, 1932 and were at 97 per cent in April of this year.

Not all materials are on hand in this abundance. Fuel, limestone, ferroalloys and, in a few cases, scrap are below the general figures. For instance the stocks of limestone and flux on April 1, 1933, were down about 25 per cent from the average for the five pre-depression years. Stockpiles of coal, coke and other fuels were reduced even more sharply, the current level of inventories being 48 per cent under the 5-year average. Fuel supplies have shrunk consistently since the beginning of 1929.

On the other hand the inventories of pig iron, scrap and ferroalloys combined for typical leading steel producers increased from 100 in the 5-year period to 126 per cent in April, 1932 and then dropped to 117 per cent as of the first of April of the current year.

The majority of producers are well fortified with pig iron in relation to 1929 practice. Many of them are fairly well protected on scrap, but there are several noteworthy exceptions. One company reports a scrap pile only 25 per cent as large as in 1929 In recent months a number of producers have bought heavily to replenish stocks and to insure protection against being obliged to cover at higher prices at a later date.

In the case of iron ore, current stocks also are above the pre-depression average. The average as of April 1 last for a number of large producers is 103 per cent of the 1924-1928 level. This is not surprising in view of the tonnage of iron ore reported on hand in furnace yards and at lower lake docks. Comparative figures on these inventories, as compiled by the Lake Superior Iron Ore association, are as follows:

LAKE SUPERIOR IRON ORE
On hand at Docks and Furnaces*

	Gross Tons	Per Cent of 5-yr. average
April 1, 1933	29,556,975	126
April 1, 1932	34,491,289	142
April 1, 1929	20,005,416	87
5-year average, April 1, 1924 to 1928, inc.	23,382,968	100

In spite of what appears to be an ample backlog of metallurgical supplies when compared with past years of activity, a continuation of the present spurt in steel demand will cause some stacks to return to blast. It may also force a revision upward of the estimates of the amount of iron ore to be carried to lower lake ports during the current season.

TABLE III

Steel Company Inventories, As Shown on Balance Sheets

THOUSANDS OF DOLLARS AT THE LOWER OF COST OR MARKET

	Dec. 31, 1932	Dec. 31, 1931	Dec. 31, 1928	5-yr. ave., 1923-1927
1. United States Steel Corp.	$258,354	$302,600	$296,841	$328,763
2. Bethlehem Steel Corp.	51,468	67,656	61,539	74,994
3. Youngstown Sheet & Tube Co.	41,128	48,137	46,813	50,385
4. Jones & Laughlin Steel Corp.	26,779	31,288	27,879	29,255
5. Republic Steel Corp.	21,596	30,143	19,566*	.....
6. National Steel Corp.	20,630	23,864	18,793*	.....
7. Wheeling Steel Corp.	16,028	19,608	27,167	24,803
8. American Rolling Mill Co.	15,152	17,118	19,134	12,952
9. Crucible Steel Co. of America	14,478	17,559	14,779	17,103
10. Inland Steel Co.	12,644	13,000	11,822	11,561
11. Pittsburgh Steel Co.	8,211	8,817	11,086	8,671
12. Colorado Fuel & Iron Co.	3,682	5,830	9,656	7,606
13. Otis Steel Co.	3,526	4,962	6,090	5,963
Total, excluding 5 and 6	451,450	536,575	532,806	572,056
Per cent of 5-year average	79	94	93	100

*Dec. 31, 1929.

6. Summary

From the foregoing, it would appear that the condition of inventories all along the distributing chain is such that the effect of continued demand for manufactured products will be transmitted swiftly from manufacturer to fabricator to mill to steelworks. Particularly the curtailed supplies of manufactured articles in distributors' hands and the still lower stocks of iron, steel and other materials in manufacturers' plant storehouses mean that either sporadic or sustained buying of manufactured articles of steel must be reflected immediately in increased operations of mills and furnaces.

Aside from this aspect of the inventory situation is the imminent need of restoring stocks all along the line to provide reasonable delivery and service in a period of moderate industrial activity. In the pruning of many inventories, attempts were made to reduce quantity but to preserve diversity. The results are stocks illsuited to the requirements of ordinary business volume. This situation must be corrected promptly.

In times of fair activity more than 6,000,000 tons of steel must be kept on hand to cushion the irregular flow of demand and to augment mill shipments. At present this reservoir is about 3,500,000 tons. It must be restored gradually to a higher level to provide consumers the selectivity and service to which they were accustomed in the past.

The status of inventories today is much more conducive to the development of a sustained buying movement and accompanying industrial activity than was the case a year ago. An examination of the chart on page 13 shows how stocks have been reduced in the past year.

From the standpoint of benefits to industry, the present condition of inventories will be a favorable factor in the march to business recovery.

First Quarter Steel Losses Vary Little From Fourth

NINE leading integrated producers of iron and steel, representing 82 per cent of the country's steelmaking capacity, reported net losses aggregating $32,839,627 in the first quarter of 1933, compared with net loss of $33,874,324 in the last quarter of 1932 and $26,287,592 in the first quarter of 1932.

If the experience of these nine producers be typical, a computation for the entire industry discloses a net loss of $40,048,300 in the first quarter. On the basis of a production of 2,961,735 gross tons of ingots, this averages $13.52 per ton.

On the same basis, the per ton ingot loss in 1932 averaged $12.33, being $7.72 in the first quarter, $13.78 in the second, $17.53 in the third and $12.22 in the fourth.

Of these nine producers only one —the National Steel Corp.—made a profit. Five of the other eight reduced their losses from the fourth quarter of 1932 to the first quarter of 1933.

Steel Corp. Holds Deficit Stationary

NET deficit of the United States Steel Corp. and subsidiary companies for the quarter ended March 31, after all charges, was $16,730,271, a loss which was swelled to $18,531,676 after the 50 cent dividend on the preferred stock.

Compared with the net loss of $16,729,368 in the fourth quarter of 1932, the position of the Steel corporation was practically stationary. There was, however, an increase of $3,512,000 over the loss sustained in the first quarter of 1932.

Following is the detailed statement of the Corporation:

Deficit for the quarter resulting from operations after deducting all expenses incident thereto, including ordinary repairs and maintenance of plants and taxes..		$ 3,795,473
Charges and allowances for depletion, depreciation and obsolescence		9,603,706
Deficit		$13,399,179
Interest charges for the quarter:		
On bonds of subsidiary companies	$1,308,656	
On United States Steel Corp. bonds outstanding	3,576	
		1,312,232
Total deficit from operations		$14,711,411
Add, Proportion of overhead expenses (of which taxes alone are $1,713,914) of the Lake Superior iron ore properties and Great Lakes transportation service, normally included in the value of the season's production of ore carried in inventories, but which because of the extreme curtailment in tonnage of ore to be mined and shipped in 1933 is not so applied		2,018,860
		$16,730,271
Dividend for the quarter on stock of United States Steel Corp.:*		
Preferred, ½ per cent		1,801,405
Total deficit for the quarter provided from undivided surplus		$18,531,676

*Dividend payable: Preferred, May 29, 1933, to stockholders of record May 1, 1933.

Jones & Laughlin Deficit in First Quarter $2,060,645

Jones & Laughlin Steel Corp., Pittsburgh, and subsidiary companies, reports in its $2,060,645 net loss for the first quarter of 1933, a larger loss than for the preceding quarter but a smaller loss than in the first quarter of 1932. The fourth quarter of 1932 showed net loss of $1,717,290, whereas a year ago the figure was $2,399,089.

In the quarter ended March 31, operating loss, including provision for taxes, was $805,384, depreciation was $1,148,372, bond interest $106,889, and preferred stock payment $146,785, thus accounting for a total charge to surplus of $2,207,430.

The company declared an unchanged dividend of 25 cents on the 7 per cent cumulative preferred stock payable July 1 to holders of record June 13.

National Earns $280,844; Asset Position at New High

National Steel Corp., Pittsburgh, made net profit of $280,844, after all charges, in the first quarter, equivalent to 13 cents a share. In the same quarter of 1932, earnings were $592,799 or 27 cents a share. The company's cash and net quick asset position on March 31 was the best in history.

Detailed figures for the quarter just ended show profits before charges of $1,539,789, depreciation and depletion $689,926, interest $513,677 and federal tax $55,340.

In the corresponding quarter of 1932, profits before charges were $2,024,655, depreciation and depletion were $785,560, interest was $536,944 and federal tax was $109,351.

Republic Statement for First Quarter Is Improved

Republic Steel Corp., Youngstown, experienced net loss from operations, after charges, in the first quarter of $2,453,435, which after the guaranteed preferred dividend on Trumbull-Cliffs Furnace Co. stock expanded to $2,521,568. This showing was substantially equal to that of the first quarter of 1932 when the loss was $2,476,292, and slightly better than the fourth quarter of 1932 when the deficit was $2,620,722. Net gain from operations, after maintenance and repairs, in the first quarter was $220,829.

Sheet&TubeOut$3,473,370

Youngstown Sheet & Tube Co., Youngstown, O., reduced its net deficit from $3,684,741 in the fourth quarter of 1932 to $3,473,370 in the first quarter of 1933. Compared with the opening quarter of 1932, the quarter just ended piled up a deficit about $400,000 greater. H. G. Dalton, chairman, forecast that business would improve. Current assets to liabilities are 14½ to 1, with cash and government bonds totaling $13,921,907.

Bethlehem Showing Is Little Changed

BETHLEHEM STEEL CORP.'s first quarter loss of $5,769,451, after all charges, was the largest in its history and a sharp increase over the $3,685,769 of the first quarter of 1932, but was little changed from the $5,621,672 deficit of the last quarter of 1932. If the dividend paid in the first quarter of 1932 is included, the deficit for that quarter was $5,330,769, or not far from that of the first quarter of 1933.

However, every current indicator is favorable, E. G. Grace, president, pointed out. Present operations are at 23 per cent, compared with an average of 15.8 in the first quarter, the value of orders on hand March 31 was $38,360,601, or $8,000,000 higher than the quarter previous, present increase in demand appears to be more than seasonal, and asked to guess at what rate Beth-

lehem could show a profit, Mr. Grace estimated 40 per cent.

A comparison follows:

	First Quarter 1933	Fourth Quarter 1932
Total income of the corporation and its subsidiary companies	*$ 866,144	*$ 566,937
Less—Interest charges	1,658,381	1,699,324
Balance	*$2,524,525	*$2,266,261
Less—Provision for depletion and depreciation	3,244,926	3,355,411
Net income	*$5,769,451	*$5,621,672
Less—Dividend declared on preferred stock		
Deficit	$5,769,451	$5,621,672

*Deficit.

Wheeling Betters Year Ago

Wheeling Steel Corp., Wheeling, W. Va., reports net loss of $802,419 for the first quarter against a loss of $823,137 in the same quarter a year ago. In the 1933 quarter, profit from operations was $858,557. After idle plant expense and maintenance charge, a balance of $258,231 was reported. Depreciation of $872,534 was charged off. With regard to the net loss for the period, surplus of $5,663,640 as of Jan. 1, 1933, was reduced to $4,861,221 as of March 31.

Inland's Loss Is Larger

Inland Steel Co., Chicago, reports net loss in the first quarter, after charges, of $1,012,053, compared with net loss of $820,541 in the first quarter of 1932 and loss of $836,517 in the fourth quarter. Net earnings from operations for Inland in the first quarter were $77,001.

□ □ □

Allis-Chalmers Mfg. Co., Milwaukee, reports first quarter loss of $869,986, after charges, compared with $936,395 a year ago.

□ □ □

National Acme Co., Cleveland, reports net loss in the first quarter, after charges, was $154,794, against $263,819 a year ago.

□ □ □

Virginia Iron, Coal & Coke Co., Roanoke, Va., had net loss of $13,049, after charges, compared with $10,776 in the first quarter of 1932.

□ □ □

Col. Otto Miller, of Hayden, Miller & Co., Cleveland, is chairman of a committee to work out a plan of reorganization for the Empire Steel Corp., Mansfield, O., which went into receivership in May, 1931, and has since been operated by C. H. Henkel as receiver.

W.H. Pouch Heads Concrete Institute

W. H. POUCH, Concrete Steel Co., New York, becomes president and chairman of the board of the Concrete Reinforcing Steel institute, Chicago, following decision at the convention at Pittsburgh, April 25, to place at the head of the institute for the next two years those who directed it from 1925 to 1927, during its first two years.

Other officials elected are. Vice president, George E. Routh Jr., Kalman Steel Corp., Bethlehem, Pa.; treasurer, C. Louis Meyer, Concrete Engineering Co., Omaha, Nebr.; secretary, R. W. Johnson, recently engineer for the institute, who has been carrying on the work of M. A. Beeman, who resigned as secretary a short time ago.

The new board of directors, in addition to Mr. Pouch and other officers, includes: Hugh J. Baker, Hugh J. Baker & Co., Indianapolis; Blair M. Boisseau, Virginia Steel Co., Richmond, Va.; Charles M. Gunn, Carle & Co., San Francisco; Ralph F. Healy, Igoe Bros., Newark, N. J.; O. W. Irwin, Truscon Steel Co., Youngstown; E. W. Langdon, Joseph T. Ryerson & Son Inc., Chicago.

Pledge Further Support

Increased financial support from bar producers for activities of the institute was reported. The institute now has a copyrighted trademark which will be stamped on all reinforcing bars handled by members as an indication of quality material.

Discussing market problems, O. W. Irwin, retiring president, said the institute must make itself felt in eliminating bid peddling, below-cost selling and other market evils. He also pointed out the progress made in the campaign against imports of foreign bars, resulting in a sharp decline in imports in the last half of 1932 and a corresponding increase in domestic business.

Institute To Devote Half Day to Economics, May 25

An innovation at the May 25 spring meeting of the American Iron and Steel institute, New York, will be the devotion of the entire morning session to economic problems of the steel industry. Among speakers will be Francis H. Sisson, vice president, Guaranty Trust Co., New York, and Charles F. Kettering, president, General Motors Research Corp., Detroit. Charles M. Schwab, chairman of the institute, will open the morning session at usual, while Robert P. Lamont, president, will close it.

Technical papers in the afternoon will include the following:

"The Use of Rolled Steel in Machine Construction," by H. G. Marsh of Carnegie Steel Co., Pittsburgh; to be discussed by Everett Chapman, first vice president in charge of engineering, Lukenweld Inc., Coatesville, Pa. and Lloyd Jones, manager, E. W. Bliss Co., Salem, O.

"The Aging of Mild Steel Sheets," by Dr. Anson Hayes, director of research, American Rolling Mill Co., Middletown, O.; to be discussed by Dr. John Johnston, United States Steel Corp., New York.

"Insulation of Open-Hearth Furnaces" by E. F. Entwisle, superintendent Saucon division, Bethlehem plant, Bethlehem Steel Co., Bethlehem, Pa.

Welding Society Elects Officers for 1933

Frank P. McKibben, consulting engineer, Black Gap, Pa., was re-elected president of the American Welding society at its annual meeting held at the Governor Clinton hotel, New York, April 27-28.

J. J. Crowe, Air Reduction Sales Co., was named senior vice president. Two divisional vice presidents were elected; D. J. Williams, Air Reduction Sales Co., representing the Pacific Coast, and Gwynne Raymond, American Tank & Equipment Corp., Oklahoma City, Okla., representing the southern division.

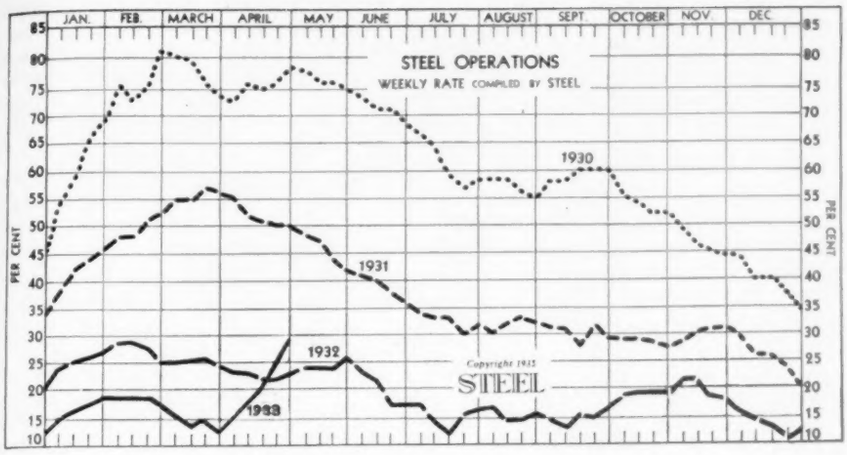
Directors at large elected as follows: Andrew Vogel, General Electric Co., Schenectady, N. Y.; W. H. Gibb, Thomson-Gibb Electric Welding Co., Bay City, Mich.; H. S. Smith, Prest-O-Lite Co. Inc., New York; J. C. Lincoln, Lincoln Electric Co., Cleveland; and W. C. Swift, American Brass Co., Waterbury, Conn.

Receives Miller Medal

Herbert H. Moses, development section engineering department, Linde Air Products Co., New York, was awarded the society's Samuel Wylie Miller memorial medal for 1932 for outstanding welding achievement. Mr. Moss has been active in the development of oxyacetylene welding of structural steel in buildings, small houses and railroad cars and in gas cutting.

Only through co-operation by individual companies can an industry protect itself against disintegration and depression, declared Charles F. Abbott, executive director, American Institute of Steel Construction.

He pointed out that those industries best organized into associations and institutes have more successfully withstood the ravages of the past three years of depression, and cited the various means at the disposal of an organized industry to promote not alone its best interests but the best interests of the public dealing with that industry.



Steel Rate Jumps to 29%; May Cross 30 This Week

STEELMAKING operations lifted 4 points in the week ended April 29, going to 29 per cent, higher than any week in 1932 and attaining a level not reached since November, 1931.

Provided Cleveland and Buffalo mills continue to speed up, as indicated, and Pittsburgh does not ease off more than a point, the ingot rate this week will go to 30 per cent or higher.

Youngstown mills supplied the greatest impetus last week, improving from 23 per cent to 30 and breaking through to the best rate since a year ago February. One steelmaker—Republic—reached 50 per cent.

Pittsburgh appears to have lost some momentum, and Birmingham is slowing down as it has finished the run on rails which boosted its rate from 12½ per cent to 20. Otherwise, the buoyancy of the past month continues undampened.

Youngstown, O.

Steel output soared this week to 30 per cent, up seven points on the heaviest flood of orders received here in three years. District operations broke through to a new high level since mid-February, 1932. Republic Steel Corp. ingot output in the valleys jumped to 50 per cent. A bessemer plant and more than half of its 23 open hearths are melting. Thirty of 83 open hearths and three of four bessemer plants in the district are operating.

Pittsburgh

Instead of an indicated gain to 22 per cent last week, steel ingot operations leveled off at an unchanged 21 per cent rate. This is an average for all mills in this district. A leading mill here continues to show the best operating schedule, with smaller independents varying between 15 and 25 per cent. Ingot operations do not correctly gage the situation as finishing mills have been drawing from semifinished stocks. There are still only 8 out of 53 steelworks blast furnaces blowing, and one of this number is on ferromanganese. The outlook for this week points to a slightly easier rate at 20-21 per cent inasmuch as seven open hearths at the Edgar Thomson works probably will go out.

Chicago

Ingot production increased more than 2 points last week, with 26 per cent of steelmaking facilities engaged, highest level in over a year. The outlook for the coming week points to retention or improvement of this figure. Blast furnace operations also have risen, another stack having been lighted at Gary, which gives the district six active furnaces of 36 steelworks units, four being Corporation and two independent stacks.

Cleveland

Steelmaking operations here were at 47 per cent on April 9, due to the lighting of two more open-hearth furnaces by the Corrigan, McKinney Steel Co., but the average for last week was 41 per cent, a gain of 5 points over the preceding week. If present plans carry, this company will light two more furnaces this week, giving it the highest rate since 1929. Corrigan, McKinney also is preparing to light a third blast furnace. Otis Steel Co. has five open hearths on, American Steel & Wire Co. three. On May 1 the latter company was to discontinue open-hearth operations here, obtaining steel from Lorain, O.

Philadelphia

Eastern steelmaking operations are expanding slowly, up about a point to 15 per cent. With activities in the railroad, building construction and shipbuilding fields still at low ebb, eastern business continues greatly restricted. Miscellaneous buying, however, is expected to bring a slight further gain this week.

Buffalo

Steelworks operations in the Buffalo district closed April at a rate more than double the average of the first quarter. A 35 per cent operating schedule was attained at the end of last week with possibility of a 2 point advance by the middle of this week. There were 13 open hearths

Operating Rate of the Steel Industry, by Weeks

All figures except the monthly open-hearth and bessemer ingot totals of American Iron and Steel institute are percentages. Estimates are based upon weekly reports from the Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Ala., and Buffalo districts, which are weighted. Weeks end Saturday.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	Steel's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.....	22	25	26	27	28.5	25.7	1,454,309	25.86
Feb.....	28.5	27	25	25	....	26.4	1,450,648	26.83
March....	25	25.5	24.5	23	....	24.5	1,403,723	24.04
April.....	23	22	22	23	24	22.8	1,233,603	21.94
May.....	24	24	25.5	23	....	24.1	1,101,994	19.60
June.....	21	17	17	17	....	18.0	893,899	15.90
July.....	14.5	12	15.5	16.5	16.5	15.0	790,055	14.61
Aug.....	14.5	14.5	15.5	14.5	....	14.7	829,236	14.20
Sept.....	13.5	15.5	15	17	....	15.3	971,365	17.28
Oct.....	18	19	19.5	19.5	19.5	19.1	1,064,598	18.93
Nov.....	21	21	19	17.5	....	19.6	1,010,894	17.98
Dec.....	16	15	14	12	13	14.0	843,244	15.00
1933								
Jan.....	15.5	17	18	19	....	17.4	1,009,483	17.84
Feb.....	19	19	19	17	....	18.5	1,066,339	20.41
March....	15	13.5	15	14	15.5*	14.6	885,913	15.08
April.....	17.5	20.5	25	29	....	23	.....	.....

*Week ended April 1

in production at the week-end, with a certainty that at least this number would run during the week of May 1. It was regarded as possible one more unit might go into production by the middle of this week. The 35 per cent rate is the highest reached in this district since early in April, 1932.

Wheeling, W. Va.

Steelmaking capacity is 45 to 50 per cent engaged. Wheeling Steel Corp.'s operations are averaging 30 to 35 per cent, with the plant of another West Virginia mill above 50 per cent. Due to the improved demand for tin plate and strip, this ingot rate probably will hold or better within the coming week.

Birmingham, Ala.

Completion of the run on rails at the Ensley mill lowered the steel rate here from 20 per cent to 15 by the middle of last week, and for this week the average will be about 12½ per cent.

Steel's Wrath Rises Against 30-Hour Bill; Washington News

A SOMEWHAT belated but none the less enormous and probably effective protest is being registered against the 30-hour week bill, passed by the senate and now before the house committee on labor.

Scarcely an iron and steel and allied company has failed to register its objections. Typical is that of the American Institute of Steel Construction, which alleges that because structural steel is fabricated in the shop it would be subject to the 30-hour restriction, whereas reinforced concrete, masonry and lumber construction would be largely exempted.

Secretary of Labor Perkins appearing before the house labor committee said that the bill as it passed the senate could not be regarded as an administration measure, but proposed amendments which would make it so.

Secretary Perkins admitted that the 30-hour bill represents one way to spread employment, but she said that it would not solve the problem of increasing purchasing power, which she said should be a fundamental objective of the legislation.

Wants More Flexibility

The plan which the secretary suggested to the committee included government regulation of working hours, production, and minimum wage levels. She advanced her suggestions as a substitute for the bill as it passed the senate, which she stated did not contain sufficient flexibility for purposes of administration. This is almost the identical language which President Roosevelt used at a recent press conference in which he discussed his ideas of the bill.

In connection with the hearings now being held by the committee, Representative Lewis, of Maryland, introduced a substitute for the measure under discussion which requires that available work in each industry be divided equally among the workers in that particular industry.

The new Lewis measure also provides for the establishment of a national trade association for each industry, to have a board of nine members, three to be employers, three to be employes and three to represent the public.

This bill not only provides for persons now employed but also requires that each industry care for unemployed workers of that particular line whose competence in the craft is approved by a state workmen's accident commission.

Speaker Rainey of the house states that the bill presumably in a revised form will be before the house in two weeks.

Freight Rate Hearing Opens

Hearings began last week and will continue this week before the interstate commerce commission in connection with the commission's investigation to reduce freight rates. It is expected that the hearings will last at least another week in spite of the fact that the commission has announced that it wants to expedite its decision. Last week most of the time was taken up by the coal and lumber interests.

An early decision of the commission is expected, and it has been decided by the commission that no tentative decision will be issued but that the decision, when it is made, will be final.

Among representatives of the steel industry wanting to be heard are the United States Steel Corp., Institute of Scrap Iron and Steel, Alabama Iron and Steel Shippers' Conference, Youngstown iron and steel manufacturers, Andrews Steel Co., United States Pipe & Foundry Co., American Cast Iron Pipe Co., National Cast Iron Pipe Co., McWane Iron Pipe Co., Central Foundry Co., Coke Iron & Roofing Co., Newport Rolling Mill Co. and others.

The commission has arranged a tentative schedule which shows that representatives of the steel industry will be heard on May 5, with time allowed on May 6 in case their arguments are not completed on the 5th.

Against Domestic Manganese

Thomas Dougherty, representing the American Iron and Steel institute, New York, appeared April 28 in executive session before the interdepartmental board of contracts and adjustments against the suggestion of the American Manganese Producers' association that the government specify the use of domestic manganese in steel used for federal buildings. Mr. Dougherty told the board that the domestic product does not have the proper content for steelmaking.

No Dumping from France

Following an exhaustive investigation, Secretary of the Treasury Woodin is notifying collectors of customs that there is no justification of a finding of dumping of cast iron pipe on the American market from France. This investigation has been under way more than a year.

Notices of suspected dumping were issued by the appraising officer at Baltimore, covering importations of cast pipe from France. In this connection the secretary states that "after careful consideration of the evidence in this case I have reached the conclusion that a finding of dumping with respect to importations of cast iron pipe from France is not justified and must decline to issue such a finding."

Appraising officers who have been witholding appraisements on importations of pipe from France by reason of notices of suspected dumping have now been authorized to make their appraisement reports without regard to the question of dumping.

□ □ □

Secretary of Commerce Roper's first business announcement by the new administration claims that business has made steady progress since the latter part of March, and preliminary data for April indicate further gains in both production and distribution.

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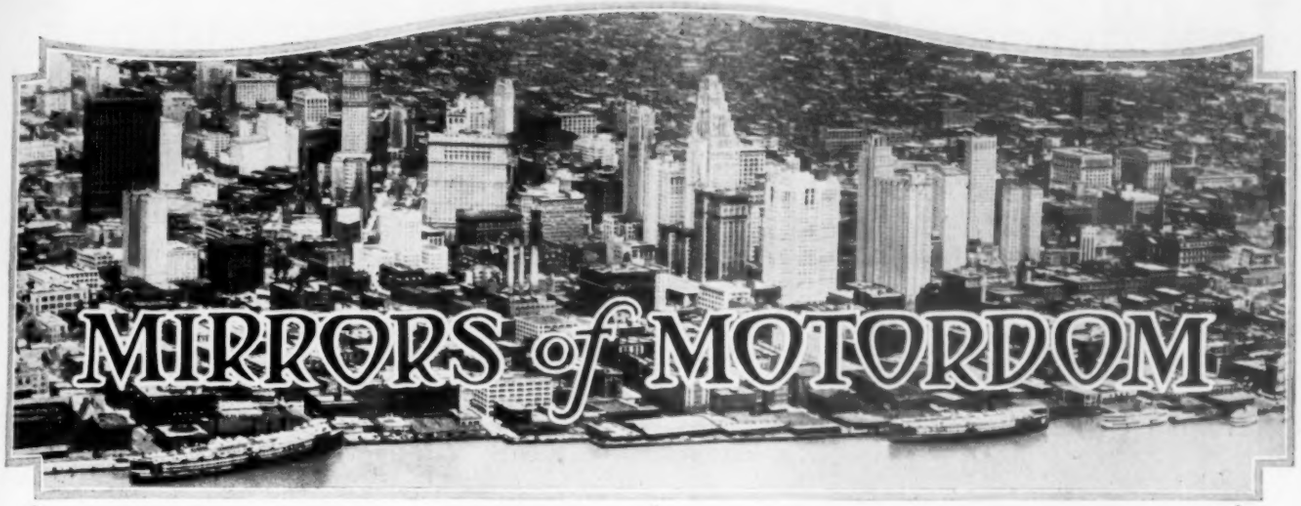
Interstate commerce commission has amended its fourth section order with respect to iron and steel scrap between southern points to include rates on old car wheels and axles for remelting purposes only.



DETROIT

MAY opens for the automobile industry with a rate of production that is the highest since July, 1931, and a spirit that is the most buoyant and confident since the spring bulge of that year.

Every surface indicator is favorable: Retail sales in April, which were heavy, apparently signalled the belated opening of spring buying; rising cotton and grain prices are enlarging buying power in the South and West, as increased employment is in the industrial East; people are spending money released by banks and are in no mood to conserve any margin of income over the cost of living.

Export demand was increasing before the dollar began depreciating abroad; Chrysler overseas sales, for example, were 46.6 per cent greater in the first quarter of this year than last. Now there is further impetus.

Even more important are two intangible considerations: The enormous replacement market that has been backing up since 1929, and inflation. Automobile executives are saying little, but they visualize their industry the beneficiary of tremendous demand if, as they feel certain, inflation touches off a boom in commodities.

Production Gain Surprising

April production of automobiles, difficult to gage because of the ascending scale all month, probably exceeded the 184,295 units of last May and 183,106 of June—the twin peaks of 1932, when Henry Ford was capitalizing his first eight.

Official statistics of the department of commerce for March upset all forecasts. Instead of declining sharply, production actually improved, totalling 118,592 units compared with 106,825 in February and 130,044 in January.

This showing puts first quarter production for 1933 at 355,461 units, only 160 below the first quarter of 1932. Output of passenger cars was greater than a year ago, being 299,546 units against 292,116.

May schedules obviously are nebulous at this time, but on the basis of April being close to 200,000 units May ought to exceed that level. Not since July, 1931, when assemblies totaled 218,490 units, has 200,000 been topped.

Ford last week crossed 2500 units daily, 5 days a week, on the way up, indicating a May total in excess of 55,000 units. Ford sales are even greater than current production signifies, as the company has about 100,000 of the first eight series yet to market; these are being shifted about the country as demand dictates, and in some cities the 2-door sedan is offered at $400.

Ford Selling Credit Corp.

Material for the new low-price Ford line is expected to be placed this month. There are some who contend that this series will be held off until fall, but Mr. Ford himself is quoted as saying it will be offered soon. To accommodate deliveries in Northern Ohio, the Cleveland assembly plant has been reopened as a warehouse.

Continuing his policy of disintegration, which Mr. Ford states will probably not end until only engines are assembled at the Fordson plant in Detroit, negotiations are under way in New York for the sale of the Universal Credit Corp., organized by Mr. Ford in 1928 to finance the sale of his cars. Distribution of 30 per cent of the frozen bank deposits in Detroit last week released some $18,000,000 to the Ford organization.

Again it is reported that a change is in prospect at the Ford steelworks the most recent rumor being the leasing of one of the bar mills to an eastern steelmaker.

Chevrolet production in April is believed to have approximated 55,000 units, with retail sales still boiling and forecasting at least an equally-good May. In all departments Chevrolet is now on a 5-day week. Last week General Motors took in at Saginaw the first cargo of a commitment for about 125,000 tons of pig iron this season, most of it destined to be melted into Chevrolet engines.

Plymouth, which has an extra stimulus in stocking dealers with its new 108 and 112-inch series, has scheduled 25,000 for May or 3000 more than in April. Pontiac and Dodge each will not fall far short of 10,000 units this month, according to present indications, with Hudson-Essex and Olds at 5000 units each or better. Hudson-Essex shipped 4600 cars in April.

New Reo and Auburn

In these seven lines—Ford, Chevrolet, Plymouth, Dodge, Pontiac, Olds and Hudson-Essex—an output of almost 165,000 cars is underwritten. In addition, Graham, Hupp, Packard, DeSoto—practically all other manufacturers, in fact—report expanding retail sales, and hence production. Reo is more active on new models incorporating the new transmission with eliminates the gearshift. Of outside manufacturers, Auburn also has new models under way.

Willys-Overland, which is producing 4400 trucks for International Harvester, has received court sanction to build 1600 passenger cars.

This stir in production is accompanied, of course, by a proportionate increase in consumption of raw materials. Even purchasing agents recognize that the trend in prices is upward, and one has sought protection for the remainder of the year, but in general except in pig iron, where the custom is to cover large consumers for the season, there has been no action beyond the second quarter and no pressure for it.

One purchasing agent, who is gen-

(*Pease turn to Page* 60)

Tool Builders Ready for New U. S. Policy Toward Industry

MACHINE tool builders are alert to the possibilities in a changed relationship between government and industry. This was evident in discussion at the thirty-first spring convention of the National Machine Tool Builders' association, held April 24 and 25 in Hotel Cleveland, Cleveland. More than 100 members and guests attended the meetings.

Dexter S. Kimball, dean of the college of engineering, Cornell university, traced the progress in civilization arising from the use of machines. He cited the employment of more persons, elevation of wages, reduction of working hours, improvement in working conditions and reduction in child labor as lasting benefits of the machine.

That this changed basis of living has developed faster than society could adjust itself to it is evident to all. Dean Kimball declared that in the past decade some manufacturers lost sight of the law of diminishing return. Capital was poured into mechanization in excess of the amount on which a profitable return could be realized.

Early Profits Are Largest

The greatest profit from mechanization occurs in the early part of the cycle, asserted Dean Kimball. The return from stepping up capacity from 100 to 10,000 units, for instance, is greater than that realized from expansion from 10,000 to 1,000,000 units. Recognition of this fact may lead to the ascendancy in the next decade of manufacturing plants of medium size. "We may never again see another concentration of mechanization as large as Mr. Ford's at Dearborn," ventured the speaker.

Dean Kimball referred to proposals for government regulation of business. It is conceivable that the state may rule that a manufacturer shall not install a machine unless he takes care of the adjustment of employment involved by its introduction. Industry, he believes, should try to discharge its social obligations before the government forces it to do so. Possibly now is too late, he added, saying that already the government is planning new regulatory measures.

In any event, trade associations should assume the role of working with the government for the benefit of their industries. The National Machine Tool Builders' association, he implied, should be ready to do its part in the new partnership of government and business.

That industry should assume a larger responsibility in shaping the course of government was emphasized by Dr. W. E. Wickenden, president of Case School of Applied Science, who spoke at the formal dinner Monday evening. Willard M. Kiplinger, president, Kiplinger Washington Service, answered questions relative to current developments in Washington. In his opinion, industry is due for considerable regulation through industrial boards acting under government supervision.

At the opening session on Monday, E. A. Muller, who presided throughout the convention, presented his presidential report, which touched upon many important problems confronting the industry. F. H. Chapin, president, National Acme Co., Cleveland, and treasurer of the association, outlined the satisfactory condition of its finances.

Herman H. Lind, in presenting his report as general manager, reviewed the swift change in governmental attitude toward business. Mr. Hoover's ideal of self government in industry proved ineffectual in the depression, he said, because it provided no policing power except that of moral suasion. Now the evidence points toward regulation, legalized and effective. Each industry, he declared, must prepare itself to meet the responsibilities and opportunities of this new policy.

Mason Britton, vice president, McGraw-Hill Publishing Co., New York, expressed the opinion that modernization and rehabilitation will come into their own during the present upswing in business. He sees modernization of old rather than expansion in new plants as the most likely development in the near future.

Exposition Is Postponed

By practically unanimous vote the association voted to postpone indefinitely the machine tool exposition tentatively scheduled for October in the new exposition hall at Cleveland, it being the sense of the association that the exposition be undertaken when business conditions are more favorable. The matter can be reconsidered when conditions are more propitious, the show to be held not earlier than six months later.

The association also voted to retain in effect its present regulations applying to participation in the exposition.

With the resignation of Henry S. Beal, formerly general manager, Jones & Lamson Machine Co., Springfield, Vt., from the presidency of the association, to which he was elected last October, the office has been assumed by the first vice president, Edward A. Muller, president and treasurer, King Machine Tool Co., Cincinnati. Mr. Beal recently severed his connections with the machine tool industry.

Richard A. Heald, secretary-treasurer, Heald Machine Co., Worcester, Mass., formerly second vice president, has moved up to first vice president, and H. S. Robinson, secretary and sales manager, Cincinnati Shaper Co., was elected second vice president. To fill the unexpired term of Mr. Beale, H. M. Lucas, president and treasurer, Lucas Machine Tool Co., Cleveland, was made a director.

Reports on Foreign Trade

The recently appointed foreign trade committee, of which P. E. Bliss, president, Warner & Swasey Co., Cleveland, is chairman, submitted a report, which in the absence of Mr. Bliss was presented by C. J. Stilwell, vice president, Warner & Swasey Co. The report showed that the committee has collected many figures, but its work has only begun. For that reason it was impossible to draw any conclusions or make any recommendations.

Reporting for the government buying committee, H. S. Robinson, secretary and sales manager, Cincinnati Shaper Co., Cincinnati, stated that an attempt already has been made in congress to codify government buying. The legislation was introduced at the last session of congress and attracted little attention from industry. Only one trade association had been interested.

Mr. Robinson warned that the association must keep its eye on future legislation of this kind to make sure that ample protection to the industry is afforded. He stated that the machine tool industry is in a position to give and should give the government a set of specifications on standard tools. This would eliminate the possibility of unreasonable specifications.

The speaker reported that the navy is the government's largest buyer of equipment; in 1932-33 its purchases having amounted to $500,000. All other departments accounted for another $500,000, making a total of $1,000,000. It appears likely that the same amount and in the same proportion will hold for 1933-34, unless because of the economy program restrictions are placed on the appropriations already made.

Industrial Men in the Day's News

James Lippincott, Chairman, West Leechburg Steel Co.

ALMOST half a century is spanned by his experience in the iron and steel industry.

STARTING with Carnegie Bros., he shortly joined Kirkpatrick & Co., leaving in 1906 to go with West Leechburg.

SECRETARY, vice president and general manager, president, and now chairman are the posts he has ably filled.

COME 1935 it will be 50 years that James Lippincott has been associated with the iron and steel industry, a span during which the industry, gaged by the production of ingots, has expanded from 1,711,920 tons to a peak of 56,433,473 tons in 1929. As noted in the April 3 issue of STEEL, Mr. Lippincott has been made chairman of the board of the West Leechburg Steel Co., Pittsburgh.

In 1885, when Mr. Lippincott entered the employ of Carnegie Bros & Co. Ltd., Pittsburgh, the Merritt Brothers were locating their first claim on the Mesabi range; Gotlieb Daimler, in Germany, was just inventing a small high-speed single cylinder gas engine for propelling a bicycle; first experiments were being made on the use of iron skeletons for office buildings; the first regularly operated electric railway line in the United States was being opened at Baltimore, and the first paper on the microscopic structure of iron was being presented for the Iron and Steel institute.

With the advance of the iron and steel industry since those early days, Mr. Lippincott has kept ably abreast. Three years after going with Carnegie Bros. he was attached to the executive department of that company, but soon left to join Kirkpatrick & Co. Ltd., Pittsburgh, which in affiliation with the Chartiers Iron & Steel Co. produced sheets.

In 1897, with associates, he founded the West Leechburg Steel Co., retaining his affiliation with Kirkpatrick & Co. This latter company was sold out to the American Sheet Steel Co. in 1900, and from 1900 to 1906 Mr. Lippincott was identified with the operating and sales department of the American company.

He was secretary of the West Leechburg Steel Co. until 1908, when he was appointed vice president and general manager, serving in that capacity until 1913. He has been president of the company since 1913, and in the chairmanship succeeds J. W. Kirkpatrick, who died recently as result of injuries received in an automobile accident.

Mr. Lippincott, who now is 69, lives in Sewickley, Pa., and is a member of the Edgeworth club, Sewickley, and the Union and Duquesne clubs, both of Pittsburgh, as well as the Montour Heights country club, Coraopolis, Pa.

O J. H. HARTSUFF, general superintendent of Edgar Thomson works, Carnegie Steel Co., Pittsburgh, retired May 1 after almost 50 years identification with the steel industry. He was born in New Castle, Pa., and in 1883 became a machinist with the New Castle Wire Nail Co. Later he was associated with the Shenango Valley Steel Co., New Castle Wire Rod Co., and the National Steel Co. Upon the consolidation of the latter with Carnegie Steel Co., he was made superintendent of the New Castle works and furnaces, then superintendent of the Farrell, Pa., and also Sharon, Pa., works, and subsequently general superintendent of these divisions until April, 1920, when he was appointed general superintendent of the Edgar Thomson division.

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Edward D. Buchanan has been appointed superintendent of the open-hearth department, Butler, Pa., plant, American Rolling Mill Co., Middletown, O. He joined the Butler organization as a general foreman in the open-hearth department before it became a part of the American Rolling Mill Co. Shortly after the American company acquired the Columbia Steel Co. he was appointed assistant open-hearth superintendent.

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Edwin C. Brown, chief civil engineer, Carnegie Steel Co., Pittsburgh, retired May 1 from active duty after 37 years with the steel industry. Mr. Brown became associated with the industry in 1896, when he was made resident engineer on construction of the Butler & Pittsburgh railroad, now the Bessemer & Lake Erie. Suc-

cessively he was engineer of maintenance of way on the Union railroad and in 1906 was made chief civil engineer of Carnegie Steel Co., which position he held until his retirement. During these latter years Mr. Brown designed and constructed the Monongahela Southern railroad, linking the company's Clairton, Pa., works and its by-product coke plant.

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Albert G. Davis, vice president, the General Electric Co., Schenectady, N. Y., in charge of patents, retired May 1, after more than 35 years of service with the company. He is entering the law firm of Pennie, Davis, Marvin & Edmonds, 165 Broadway, New York, which specializes in patent work.

Charles E. Tullar, manager of the General Electric patent department, has become a member of the advisory committee and the engineering council of the company, succeeding Mr. Davis on those bodies.

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Erle L. Flad, assistant manager of slag sales, Carnegie Steel Co., Pittsburgh, since November, 1930, has been made manager of that department, succeeding W. E. Donaldson. Mr. Flad graduated from Lafayette college in mining engineering and previous to 1909, when he became identified with the Ohio works of the Carnegie company, he was on the engineering corps in the construction of the Panama canal, and also with the American Smelting & Refining Co. at Perth Amboy, N. J.

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Louis C. Bihler, retiring traffic executive of the Carnegie Steel Co., whose retirement was announced in STEEL April 17, was to be honored at a testimonial luncheon May 1 at the Keystone Athletic club, Pittsburgh. The program is sponsored by the Traffic Club of Pittsburgh, of which Mr. Bihler is a charter member and past president.

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Charles M. Schwab, chairman of the Bethlehem Steel Corp., New York, who in 1929 marked the fiftieth anniversary of his entry into the iron and steel business, on May 1 celebrated another golden anniversary—that of his marriage to Emma Eurana Dinkey, of Loretto, Pa., of which Mr. Schwab is a native and where he has his summer home.

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H. Allen Hall, for 15 years with the Ferry Cap & Screw Co., Cleveland, and prior to that with the Cleveland Y. M. C. A. and the Cleveland Builders Exchange, has been appointed assistant sales manager of the company by H. D. North, recently elected president.

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William R. Mittleman has been appointed district sales manager in New York, at 342 Madison avenue, for the Mohawk Tube Co., Cohoes, N. Y.

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R. H. McMasters was re-elected president of the Steel Co. of Canada, Hamilton, Ont., at the annual meeting, April 19. Vice presidents are: H. T. Diplock, H. M. Jaquays and R. G. Wells. H. S. Alexander is secretary, and H. H. Champ treasurer.

□ □ □

C. W. Simpson, formerly in charge of the National Acme Co. division at Windsor, Vt., which was recently transferred to Cleveland, has been elected vice president and works manager of the company.

A. E. Grissner, in charge of engineering for the company, has been elected vice president in charge of engineering.

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Harry B. Gear, assistant to the vice president, Commonwealth Edison Co., Chicago, has been elected president of the Western Society of Engineers. Charles C. Whittier, consulting engineer, Robert W. Hunt Co., Chicago, has been named first vice president, and Leigh S. Keith, consulting engineer, second vice president.

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George A. Neesan, Wyckoff Drawn Steel Co., Chicago, has been elected first vice president of the Purchasing Agents Association of Chicago.

(*Please turn to Page* 51)

Died:

GEORGE P. LOOMIS, 73, retired Pittsburgh steel executive, at St. Petersburg, Fla., April 24. His affiliation with the industry dates from 1877 when he entered business with the Crescent Steel Co., Pittsburgh. Later he founded the Globe Wire Co., Sharpsburg, Pa., and in subsequent years was identified with the Firth-Sterling Steel Co., McKeesport, Pa., which now owns the former Globe Wire Co. Mr. Loomis had been retired since 1927 and had spent the past six years in St. Petersburg.

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J. Nessley Porter, 45, president, Globe Brick Co., Kennelworth, W. Va., refractories, at East Liverpool, O., April 25, as a result of injuries received in an automobile collision.

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H. W. Craig, 52, for 31 years identified with the Chicago office of the Republic Steel Corp., at Champaign, Ill., April 21. Mr. Craig joined the Republic organization in Chicago in 1899 as a stenographer, later becoming salesman, and in 1918 was appointed district sales manager. He retired in 1930, owing to poor health.

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Carleton O. Beldon, 57, vice president and superintendent of the Ricker Mfg. Co., Rochester, N. Y. He had been associated with the company since 1904 and vice president since 1921.

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Perry E. Carhart, 72, retired chief inspection engineer for the Illinois Steel Co., Chicago, April 23 in that city. Mr. Carhart retired ten years ago, after more than 30 years of service. He was a graduate of Union college, Schenectady, N. Y., and went to Chicago in 1889.

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William M. Young, 87, one of the founders of the American Appraisal Co., Milwaukee, and widely known in the steel industry, April 18, at Hollywood, Calif. He was a native of Wisconsin and with the late John L. Moon founded the appraisal business in 1896, retiring in 1923.

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J. B. Green, 47, founder and president, Chicago Steel & Wire Co. and Fusion Welding Corp., Chicago, April 24 in that city. Mr. Green was born in Chicago and was graduated from Cornell university. He was widely known for his lectures and writings on arc welding.

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Richard J. Findlan, 62, secretary-treasurer, Aluminum Goods Mfg. Co., Manitowoc, Wis., April 23. He was born in Pittsburgh, where he took employment in steel mills when only 13. Later he was an executive of the Aluminum Co. of America for 25 years, going to the Manitowoc concern in 1914, when the eastern interest entered it.

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George H. Staat, traffic manager of Interlake Iron Corp., Chicago, and Pickands, Mather & Co., Cleveland, at his home in Cleveland, April 28, aged 45. He formerly was traffic manager of Pickands, Brown & Co., Chicago, and was appointed to his position with Interlake and Pickands, Mather, with headquarters at Cleveland, in January, 1932.

Corp. Adds Foote, Brooks

The United States Steel Corp. announces the following additions to its staff of commercial office, headed by C. L. Wood, commercial vice president: F. D. Foote, assistant to vice president, who was formerly president of Pittsburgh Forgings Co. and Greenville Steel Car Co., will be responsible for the co-ordination of sales efforts affecting railroads and railroad equipment industries, and E. P. Brooks, assistant to vice president, formerly of sales executive staff of Sears, Roebuck & Co.

Backward Nations a Reservoir For World Trade, Says Farrell

THOSE who despair of a return of our export trade to its former level take a short-sighted view of the potentialities of the world market," declared James A. Farrell, former president of the United States Steel Corp. and now chairman of the National Foreign Trade council, in speaking before the opening session of the twentieth National Foreign Trade convention at Pittsburgh, April 26. Mr. Farrell's subject was "The World Trade Outlook." He said:

"The backward countries of the world form the reserve markets of the twentieth century. To these untilled fields the enterprising foreign trader must turn his steps where millions of potential customers must one day demand a higher standard of living.

Must Turn Away from Europe

"The difficulties that confront us at present in European countries in the expansion of our foreign trade renders it necessary that we pay greater attention to the possibilities that await us in Latin America, the Orient and Africa. The pioneering spirit of an earlier America is needed to convert our doubts into sanguine hopes regarding the outlook for our foreign trade.

"To the artificial and uneconomic remedies resorted to in other countries, the United States in great part owes it inability to escape from the vicious circle created by depreciated currencies exchange control, embargoes on imports, quotas and other fantastic schemes which appeared in restraint of international trade.

"It has taken three years of bitter experience to impress upon these foreign countries the utter futility of remedies that only tend to prolong the world depression and to destroy their hopes of national recovery."

Sound World Currencies!

The assertion was made by Mr. Farrell that the most pressing need today, insofar as world trade is affected, is establishment of sound currencies in all countries. Though Mr. Farrell did not propose any specific steps to reach that goal the following speaker, Dr. Lionel D. Edie, formerly of the University of Chicago and now president of the Capital Research Co. Inc., New York, elaborated by stating that in his opinion world trade would be stabilized only after "(1) Rebuilding of our domestic markets as independent markets, (2) a definition that must be obtained of the responsibility of central banks and government treasuries for the broad movements of the world price levels, and (3) a restabilizing of the foreign exchange markets of the world."

George G. Crawford, president, Jones & Laughlin Steel Corp., Pittsburgh, presided at the opening of the convention. Among other speakers the first day were A. M. Hamilton, foreign sales manager, American Locomotive Sales Corp., New York, C. M. Peter, export manager, Black & Decker, Towson, Md., and A. Schoonmaker, export manager, Republic Steel Corp., Youngstown, O.

Group meetings were held April 27 and L. A. Paddock, president, American Bridge Co., Pittsburgh, presided at the day's luncheon. The annual world trade dinner, April 27, was presided over by E. P. Thomas.

Mills Balking at Rail-Scrap Barter

A RETURN to a form of barter is evident in the anxiety of leading railroads to obtain rails.

At least five Class I carriers have negotiated recently for even-up trades whereby they would receive new rails from steel mills in exchange for either old rails, heavy melting steel scrap, or other of their used materials, bypassing the scrap dealer.

Only the Pennsylvania has succeeded in arranging a "swap." As near as can be learned, 85,000 to 90,000 tons of Pennsylvania scrap has been exchanged with the United States Steel Corp., Bethlehem Steel Co. and Inland Steel Co. for rails.

This deal was completed ten days ago and on the basis of scrap markets then of about $5 at Chicago, $10 at Pittsburgh and $6 at Philadelphia; it is estimated that 20,000 to 25,000 tons of new rails passed in exchange. Inasmuch as the bulk of the Pennsylvania scrap was located near to Steel corporation plants, probably 50,000 of the 90,000 tons was taken in by this steel producer. In the order named, it is believed Bethlehem and Inland took the balance.

The New York Central has attempted to obtain 9000 tons of new rails in this manner. The Baltimore & Ohio wanted to get a similar tonnage and went to an eastern mill with the proposition. These exchanges were approximately on the basis of four tons of scrap for each ton of new rails, being based on a rising Pittsburgh market for scrap of about $10 and a more or less stable new rail market of $40.

In the West, the Wabash has approached a leading rail producer to accept its scrap on the basis of a $5 Chicago market and ship rails in return, but obviously on the basis of eight for one.

Most railroads have large lots of scrap for sale today in several forms. One is in old rails, bridge steel, steel from demolished structures of all kinds—in other words, scrap cut up and stocked in railroad yards.

Large Supply Available

Another type, in which there is a large available tonnage, is in rolling stock which may be in use but is definitely obsolete. A still further supply may possibly result from track and even division abandonment, if present plans at Washington go through.

To estimate the total of this vast supply of scrap is impossible. Unquestionably, it must run to well over 2,000,000 tons, all carriers considered.

The railroads, by selling obsolete equipment as scrap, benefit twice over. Not only do they write off a capital asset on which a semblance of an earning must be accounted for each year but they also receive either fresh assets such as rails or needed cash, for their discards.

Failing in their plans to trade scrap for rails, some roads have disposed of their scrap on another basis. The Southern Railway, for example, after negotiations covering two years to obtain rails in exchange from a southern steel mill, sold 200,000 tons in 16,000 old cars and 100 old locomotives a few weeks ago. This tonnage in the main is already moving into plants of American Rolling Mill Co., Wheeling Steel Corp. and Weirton Steel Co.

Sell Scrap to Mills

The New York Central, failing to get its rails in exchange, has just completed a deal with the Carnegie Steel Co. to deliver to the latter's Farrell, Pa., and Youngstown, O., plants some 30,000 tons of scrap on hand near Cleveland and Toledo, O.

The Erie railroad has a large amount of scrap available, although it recently purchased about 24,000 tons of new rails. So conspicuous was this transaction that it is but the second of new rail purchases of 1933. Along with the Santa Fe's purchase of early January, only 50,000 tons of new rails have been ordered the country over this year.

EDITORIAL

At Last, Wheels of Industry Are Off Dead Center!

LESS than a month ago many well informed individuals in the steel industry were openly declaring that they could not see anything on the horizon which held promise for an early rise in steel buying. Surrounded by daily reminders of the stagnation caused by the banking situation, they found it difficult to conceive of any series of events which could lift industry from despair to joyful anticipation in the brief span of 30 days.

But the seemingly impossible has happened. Steelworks operations have doubled in a month's time. Orders have increased by leaps and bounds in the last two weeks, and still are on the rise. What is the explanation?

Several factors contributed. Buying which had been interrupted by bank troubles in February and March was resumed in slowly increasing tempo in April. First anticipation of and later realization of the return of beer wrought a psychological change in the attitude of the public. Lifting of the ban on April 7 was followed immediately by a flurry of retail buying. Money was released from closed banks. Profits rewarded speculators in the stock market. Security and commodity prices edged upward.

Combined Influence of Real Need and Change in Attitude of Public Responsible for Upturn

On the heels of the impetus emanating from these events came intimations of inflation, and on April 19 the nation declared its decision to abandon the gold standard. This gave a new impulse to rising prices of stocks and commodities. The additional stimulus was sufficient to cause prospective purchasers, who up to that time had held back in indecision, to release their orders. It was by this curious combination of tangible and intangible factors that the wheels of business finally were pushed off dead center.

How long will improvement continue? How will it affect basic industries? Will there be an early relapse, as in the spring spurt of 1931?

No one knows the answers. With so many important national and international factors now under manipulated control and with so few of the old natural laws still potent, one would be foolhardy to venture any sort of prediction.

Nevertheless, if one is permitted to employ a few qualifications, he may be able to throw some light on what to expect. For instance, if we assume that no unforeseen upheaval occurs which would throw us out of our present psychological mood, we can count on a continuation of the current rise. In other words, it should run, with occasional additional help, for a month or two unless unwise action at Washington, adverse international developments or some other mishap again undermines public confidence.

Depleted Condition of Industrial Inventories Will Be Factor in Hastening Business Recovery

With this important reservation in mind, consider the condition of inventories in each link of the distribution chain, extending from consumer back to the source of raw materials. As shown in the study presented on page 13 of this issue, it will be found that (1) the consumer's "inventory" of articles of iron and steel is considerably less than what he needs and wants; (2) manufacturers' sales inventories of these articles are only 43 per cent of what they were in pre-depression years; (3) manufacturers' stocks of steel and other materials and supplies for manufacturing are only 40 per cent of the former level; (4) producers' inventories of iron and steel for sale are only 59 per cent of the average from 1924 to 1928; and (5) producers' inventories of metallurgical materials for iron and steel production are only slightly below the level obtaining prior to the depression.

This means that the inventory reservoirs between the consumer and producer are so low that the effect of increased demand must spread rapidly back through jobber, manufacturer, fabricator, warehouse, mill and furnace. It means rapid transportation of orders into activity, activity in wages and more orders, and wages and orders into increased buying.

Thus the cycle is started on its upward path. It is what we have prayed for during four long years. It may continue a while on its own momentum, but the spark of life still is too feeble for it to progress far without continued application of timely artificial stimulants.

Above all it is important that nothing be permitted to break the spell of returning public confidence. Leadership, which has been an important factor thus far, now has a great responsibility in balancing sound judgment against too reckless experiment. False steps at this time would be doubly unfortunate.

THE BUSINESS TREND

Business Gains Ground as Nation Drafts Policies

BUSINESS is swinging along at a pace which causes many observers to open their eyes in wonder. The expansion of retail trade, increased activity in many industries and the steadier tone of the stock market at higher levels constitute more convincing evidence of improvement than has been witnessed in two years.

The impetus for these encouraging manifestations came from several sources. Much of the buoyancy in retail business may be attributed to anticipation of higher prices and to seasonal influences. On the other hand, the rapid expansion of orders for steel and certain other industrial products results more from the resumption of buying interrupted by the March bank moratorium than from the influence of anticipated inflation.

Considering the fact the country recently went off the gold standard and that it is about to enter into experiments of state regulation on a grand scale, industry is strangely apathetic to many Washington proposals which may shape business along new lines. Thus far there has been a tendency to accept without serious question almost everything that the new administration has offered. Although some of the features of the Black and various Perkin's proposals are bound to be obnoxious to industry, the protests to date have been comparatively mild. Even the criticisms by conscientious Democrats to the effect that the President is in danger of veering sharply to the left have not provoked marked interest or concern in business circles.

Nation, in Experimental Mood, Has Little Concern for After-Effects of Present Acts

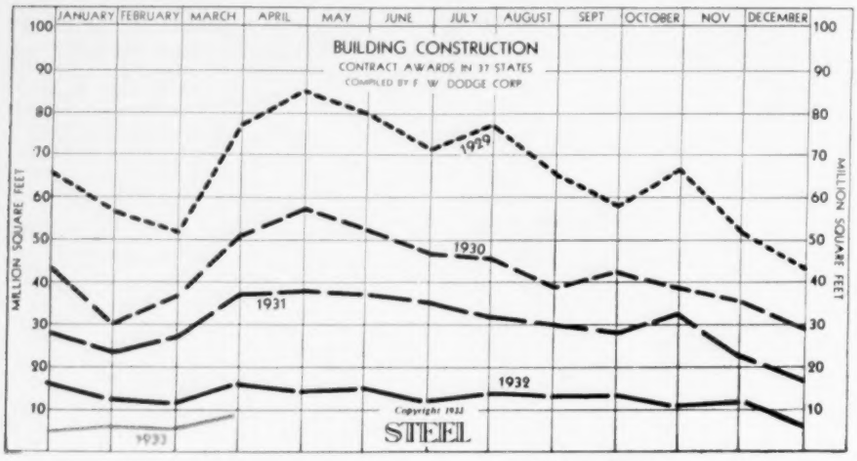
Whether this attitude is based upon a willingness to give the new administration a free hand or upon a reckless resignation to the idea of trying anything, no matter how radical it may be, cannot be determined now. It is certain, however, that many intelligent individuals are in a frame of mind which permits them to disregard the long time consequences of present national policies and to think only of their immediate effect. Nationally we are beginning to think and to say, "Let's get out of the present mess, and let the future take care of itself."

1933

April 1	$6.53
March 1	6.35
Feb. 1	6.53
Jan. 1	6.79

1932

April 1	$7.15
March 1	7.31
Feb. 1	7.52
Jan. 1	7.73



Square Feet

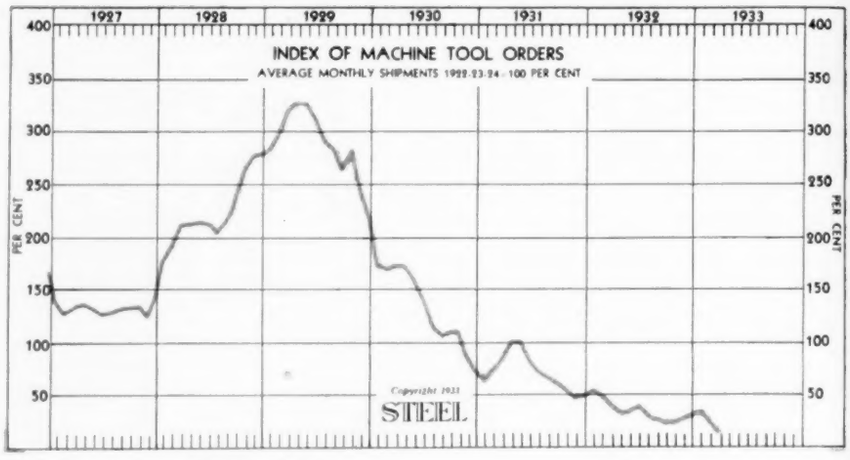
March, 1933	9,890,200
February, 1933	7,382,400
March, 1932	16,924,200

Building Construction Up Slightly in March

Building awards in 37 eastern states, gained over 2,000,000 square feet of new floor space during March. According to reports of F. W. Dodge Corp., total construction for the third month involved 9,890,200 square feet as compared with 7,382,400 in February and 16,924,200 square feet in March, 1932. The valuation of construction contracts awarded in March was $59,958,500 against $112,234,500 in the same month last year. Considering the widespread slowing down in business due to the bank holiday, March awards must be considered encouraging.

Machine Tool Buying Index Remains Low

The March index of machine tool orders as compiled by the National Machine Tool Builders association continues the downward trend to new low levels. The three-month moving average for the third month of this year was 20.1 compared with 27.5 in February and 43.1 in March, 1932. The shipment index declined from 26.7 in February to 21.8 in March while unfilled orders dropped 8 points to 27.7.



March, 1933	20.1
February, 1933	27.5
March, 1932	43.1

Exports		Imports	
March, 1933	$108,000,000	March, 1933	$ 95,000,000
Feb., 1933	101,530,000	Feb., 1933	83,750,000
March, 1932	154,876,000	March, 1932	131,189,000

March Trade Balance Lower As Imports Gain

The total value of this country's foreign merchandise trade in March was estimated at $108,000,000 as compared with $101,530,000 in February and $154,876,000 in March, 1932. According to the bureau of foreign and domestic commerce, imports in March were valued at $95,000,000 as against $131,189,000 in March the previous year, leaving a favorable trade balance in the merchandise movement for the third month of approximately $13,000,000. In March, 1932, there was a favorable trade balance of $23,687,000.

BY GUSTAF SODERBERG

Technical Director, Udylite Process Co., Detroit

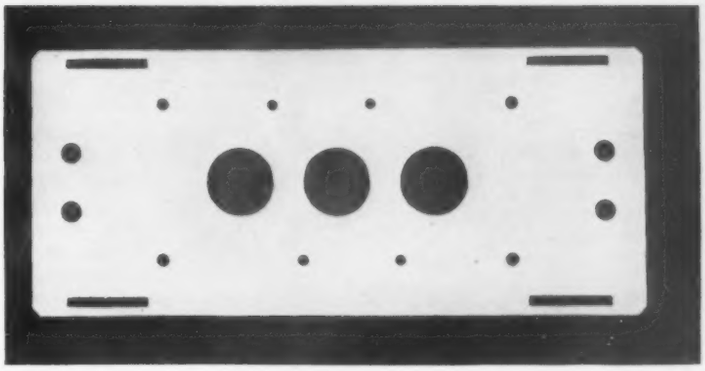


Fig. 1—Plating of this radio condenser blank in the flat effects production economies besides reducing the number of parts held in stock

ELECTROPLATED COATINGS COMBAT CORROSION AND PROVIDE ATTRACTIVE FINISHES

ELECTROPLATED finishes can be grouped roughly into two classes. The first consists of several metals which are applied primarily for decorative purposes. Unless the coatings of these metals are nonporous, they will accelerate rusting of the iron through the pores. Porosity is avoided by means of the application of heavy coatings. The second group is that class of metal finishes which are used primarily for the protection of ferrous metals against corrosion.

In the first classification, copper, nickel and chromium stand out as being most important. This group could be augmented by the addition of gold, silver, brass, rhodium and others, but these metals, with exception of brass, generally are not applied directly to steel. Cadmium is also decorative, but being at the same time a rust-protective metal, it will be treated later.

Wide use for copper plating is found in the production of decorative colored surfaces. By first coating with copper and then immersing in any one of a number of oxidizing solutions, a variety of attractive effects can be obtained. It is necessary, however, that these oxidized surfaces be protected with a coating of clear lacquer which prevents air and moisture from reaching the surface.

Thin copper coatings sometimes are applied as a rust-protective finish, but this is not good practice as such coatings actually increase the rate of rusting of the steel. Copper generally is used as an undercoating for nickel and nickel-chromium coatings. The main reason for this application is its cheapness and softness which makes it comparatively easy to buff.

Nickel, when buffed, presents a pleasing surface with a slight yellowish tinge. When rust protection is desired, heavy coatings must be applied. The brilliant nickel surface has a tendency to tarnish which spoils the effect.

Chromium is a true finishing material, unsurpassed in its bluish brilliance and nontarnishing properties. Wiping with a clean cloth restores a dirty chromium surface. The ordinary chromium coating in use today is only about 0.00003-inch thick, and does not prevent rust. Rust protection can be obtained, however, by the use of heavy nonporous chromium coatings, though such coatings are too expensive for practical purposes. Chromium, therefore, is applied over thick coatings of nickel or copper and nickel, which furnish protection.

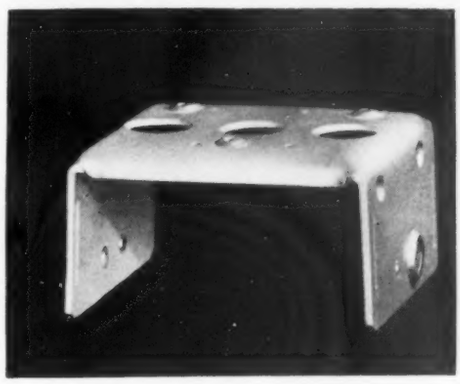


Fig. 2—The ductile coating of cadmium on this radio condenser blank permits the forming operation after plating

Zinc plate is the typically rust-protective coating. No rusting takes place through pores in the coating as the zinc itself corrodes instead and protects the metal. Zinc is an extremely active metal chemically, and its sacrificial protection of the base metal often becomes rather severe on the coating itself. Unfortunately, zinc coatings do not possess a pleasing ap-

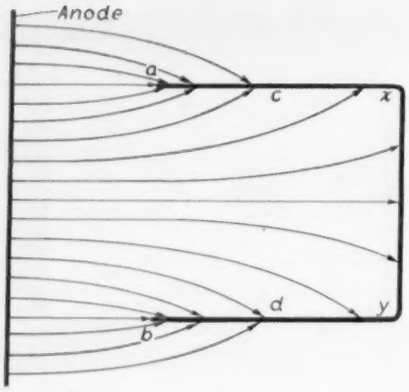


Fig. 3—A considerable amount of throwing power is required in plating deep recesses

pearance and turn dirty gray within a short time. Various methods have been suggested to obtain the protective value of zinc and a more ornamental finish; the most satisfactory is applying enamels, lacquers or japans over the coatings.

Cadmium is a most interesting metal as it can be made to combine decorative value with efficient rust protection. Cadmium plate from "plain" solutions have a matte white appearance somewhat similar to zinc coatings. Coatings which are produced in baths compounded with proper addition agents are bright and lustrous. The luster of cadmium, while not indefinitely permanent, nevertheless endures for a long time and is therefore to be compared with nickel in this respect. However, nickel surfaces must be buffed, as they come from the plating bath somewhat cloudy; this is not necessary with cadmium.

The main reason why cadmium coatings provide protection lies in the fact that they are resistant to atmospheric influences and are anodic to iron. Disregarding any electrochemical discussion, this statement means that the cadmium has to be corroded away before the iron is attacked, consequently, even though the coating may be damaged by mishandling, protection continues. Cadmium resist alkalies much better than zinc which is dissolved readily by even weak alkalies. Strongly alkaline solutions attack cadmium, but weak solutions have little effect.

Cadmium Coating Is Ductile

Coatings of this material are ductile and may be worked without peeling or chipping off. To illustrate this point, an actual case may be cited. In Fig. 1 and 2, two views of a cadmium-plated object are shown. The flat piece, a blank for a radio condenser shell, is plated in the form shown in Fig. 1. After plating it is stamped into the shape illustrated in Fig. 2.

Since the same blank is used for several different types of condensers, it would be necessary to stock approximately four times as many condenser frames as now are carried if the frames were formed before being requisitioned. To reduce the operations petween specifications and application of the parts, it is advisable to plate them before forming, an operation which will not crack the ductile cadmium plate.

In the foregoing, mention has been made of "thickness of coating." To explain just what is meant by this term, specifications which govern cadmium coatings applied for the purpose of rust prevention will be outlined.

A coating less than 0.0001-inch thick has a number of microscopic pinholes through which the base metal is exposed. Corrosion is rapid in such cases. At a thickness of 0.0002-inch these pores are covered, with the result that a continuous film envelops the base metal. A 0.0002-inch plate is an efficient rust preventive where the degree of exposure is not severe, such as indoors.

When a 0.0004-inch plate is deposited the entire surface is covered with a continuous thick film and is amply protected against severe corrosion. In general, a 0.0002-inch coating is several times as rust resistant as a 0.0001-inch; 0.0004-inch more than doubles the efficiency of the 0.0002-inch coatings.

Service Specifies Coating

Specifications for thickness of cadmium, therefore, should be 0.0002-inch for articles subject only to indoor corrosion and a minimum of 0.0004-inch for articles exposed to outdoor conditions. Where parts are plated to prevent rust while in stock or for a short period of time, a thickness of 0.0001-inch may be permitted.

Brightness, while important from the standpoint of appearance, also has a direct bearing on rust resistance of the plate. Tests have shown that a plate which comes from the plating bath bright lasts considerably longer than a dull plate of the same thickness due to the fact that a bright deposit is close grained. A dull plate is made up of larger crystals and is more porous; by retaining moisture and corrosive elements to a greater extent it is corroded more quickly.

Specifications as to luster are rather difficult to draw up since base metals differ so widely. About the only way of dealing with brightness is the simple requirement that the plate be lustrous and free from gray or burned areas.

Uniformity of thickness is the major contribution to the efficiency of rust protective coatings. If a coating is 0.0002-inch thick at one point and 0.0001-inch at another, it is safe to suppose that the thinner portion will fail much more quickly than the thick one. It is of paramount importance that protective coatings be of sufficient thickness uniformly deposited on the surface of the article.

Some plating solutions have a greater tendency to deposit uniform coatings than others. Uniformity of coating thickness has a direct and intimate connection with that electroplating phenomenon known as throwing power, this being the power of an electroplating solution to throw or deposit metal upon recessed surfaces.

Throwing Power Is Important

Throwing power will vary from one metal to another, depending upon the native properties of the metal and on the type of plating solution used. Generally speaking, alkaline and cyanide baths have considerably greater throwing power than acid baths. The following commercial plating solutions are listed in order of their degree of throwing power: Alkaline tin; cyanide cadmium; cyanide copper; cyanide zinc; acid copper; acid zinc; acid chromium. Throwing power is of great importance for the reason that the design of an article frequently makes necessary the use of a solution with high throwing power and often is the deciding factor in choosing the proper electrodeposit.

To illustrate, let us suppose a part having the cross section shown in Fig. 3 is to be plated and the actual choice of the electrodeposit has not been made. To make the conditions still more specific, suppose that points x and y must be coated with sufficient thicknesses of metal to provide efficient rust protection. In the diagram, the arrows show the direction of the current coming from the anode. Fundamental laws tell us that the current which actually deposits metal on an object will take the shortest route.

Plating solutions which have poor throwing power will allow the current to become concentrated at points a and b with the result that

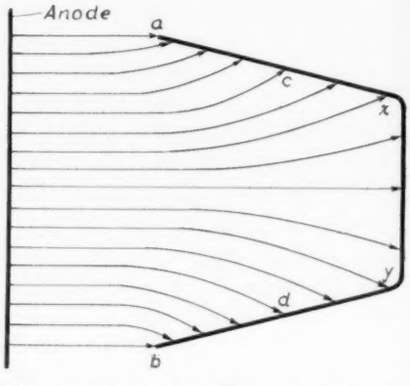


Fig. 4—Redesign of the part shown in Fig. 3 widens the possible choice of plating solution

TO MAKE CERTAIN *of unvarying* WELD QUALITY

Many fabricating and maintenance jobs require welding of absolute dependability. Precautions are taken against even slight variations in the quality of welds, and one of the most common safeguards is Roebling Welding Wire.

This wire is made for exacting service. Special manufacturing methods are employed to insure unvarying purity and uniformity in every bundle and every ton of Roebling Wire. Give this wire to a skilled welder and welds of the same high strength and durability are a certain result.

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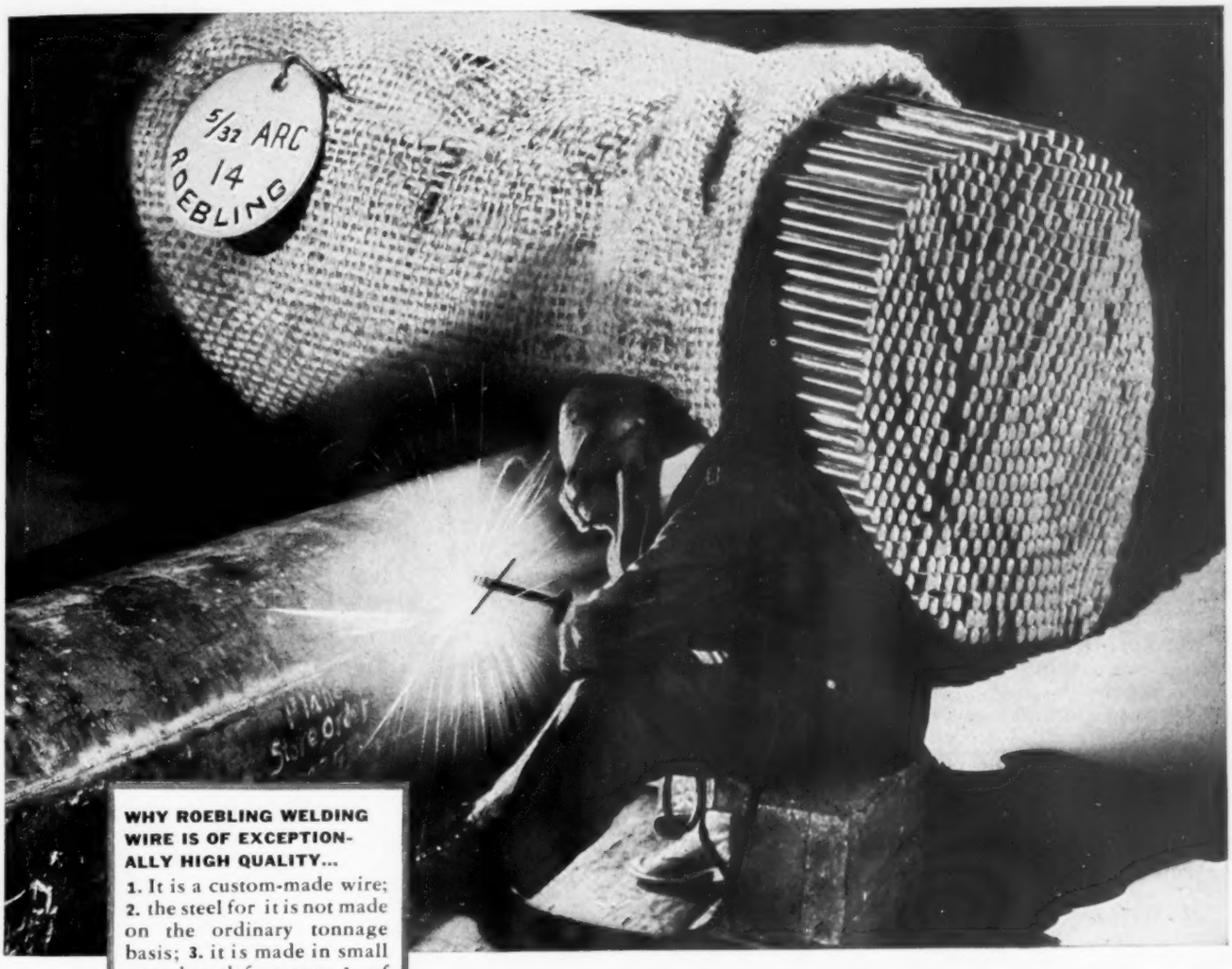

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1. It is a custom-made wire; **2.** the steel for it is not made on the ordinary tonnage basis; **3.** it is made in small open-hearth furnaces; **4.** of special melting stock; **5.** and is produced by Roebling's special methods; **6.** painstaking care is exercised throughout manufacture.

ROEBLING

THE CUSTOM-MADE WELDING WIRE—FOR EXACTING WELDERS

thick metallic deposits form there. Points *c* and *d* will receive light coatings and points *x* and *y* only flashes or no coating whatsoever. The final result is a nonuniform electrodeposit exceedingly thick at some points and hardly anything on a surface where protection is desired.

The high throwing power plating bath performs in an entirely different manner. In such solutions the points *a* and *b*, instead of drawing current excessively, resist the accumulation of recessed surfaces. Therefore, a high throwing power bath will pro-

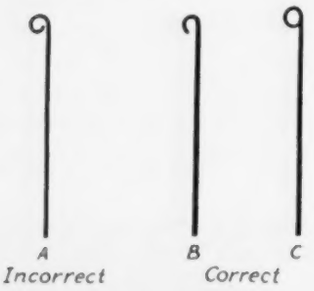

Fig. 5—Partially closed beads on a part are difficult to plate and tend to prevent escape of gas and rinse. Redesigning to open these beads or closing them by soldering or welding benefits the part

duce a fairly uniform coating completely covering the inner surfaces.

Two courses are left open; to specify a metal which it is known can be applied uniformly or to change the design of the object to place it within reach of poor throwing power baths. Should the decision be to redesign the product so that its cross section approximates that shown in Fig. 4, the choice of electrodeposited metals is broadened. Even though the part is redesigned as suggested, the solution with higher throwing power still will provide a more uniform electrodeposit.

Another method of plating the part shown in Fig. 3 could have been cited, namely, the inside anode method. The use of inside anodes, however, is to be avoided except in those cases where all other methods fail. The method requires special set-ups and a great deal of handling and therefore is out of the question for production work where economy is to be considered.

Corners May Cause Difficulty

Elimination of sharp corners will help those in charge of plating departments. A sharp corner draws current and since it presents an extremely small area the proportion of current to surface area easily goes out of balance. It is much more simple to plate a rounded corner. When sharp corners cannot be avoided, for example, on threaded surfaces, it is most desirable to use coatings which can be appied in solutions with higher throwing power. Thus nuts and bolts are being plated with cadmium because it may be deposited uniformly in the bottom of the threads without undue building up on the high points. As the thickness of the deposit is small, there is no need for undercutting threads.

A typical plating problem involving the plating of an automobile hub cap, an approximate diagram of which is shown in Fig. 6, may be cited. It is desired to plate the interior of this object. From the standpoint of the plater, there are several difficult problems associated with the plating operations and it is important that these difficulties be understood as they might occur in the coating of many parts. Points *x* and *y* are walled in so completely between metal sides that it would be extremely difficult to plate these points. Even the best of plating solutions would have a difficult time with such a design and could not throw much metal at *x* and *y*. In the case where protection at these points is essential, redesign is practically demanded. The distance between the walls must be increased to permit coverage as shown.

Still another difficulty exists with the design of this part. How are parts such as these going to be rinsed easily and thoroughly? From a study of the sketch, it is seen that rinse water, plating solution and acid material will be trapped at *x* and *y* and carried over from one tank into the next. The manner of overcoming such tendencies successfully is to drill or punch a sufficiently large hole in the outer rim of the hub cap at the lower point to provide drainage.

Gas Must Not Be Trapped

Small holes in an object overcome another plating difficulty, namely, gas pockets. Practically all metal deposition is accompanied by creation of hydrogen gas which forms gas pockets. If the gas is not allowed to escape, it prevents the plating solution from coming in contact with the surface to be plated and no metal is deposited. A hole at point *x* in Fig. 6, would provide means for escape of the gas.

Beading of edges is an important consideration. In Fig. 5*A*, is shown a bead which always will cause trouble in plating. The opening is so small that little metal will be deposited on the inside. Still the atmosphere has ready access to the inner surface and will cause corrosion when the part is exposed. Furthermore, plating liquids are trapped and cannot be removed in the rinsing operations.

There are two ways of minimizing this difficulty. In Fig. 5*B* the opening is larger and there will be reasonably thick deposit on the inside. Also the rinsing will take place easily. The second method is to close the opening completely as shown in *C*. However, this latter type of bead is difficult to accomplish, and there generally will be some point which is not closed completely. This method should not be employed unless the bead can be sealed by means of a special operation such as soldering or welding.

As parts which are plated in still tanks and automatic plating machines are suspended in the various solutions on individual hooks or on racks, it is necessary that a suitable place be provided for the hook. The main consideration besides those already discussed is that the center of gravity should fall considerably below the point of suspension so that the article will slide into the baths without unhooking.

Plating Machines Lack Flexibility

Suitable design is particularly important when full-automatic plating machines are used. While such mass production machines have cut plating costs tremendously, they are not as flexible as hand-operated equipment. The rate of upward and downward movement in transfer from tank to tank cannot be varied in most automatics and, as the parts cannot be reracked conveniently during the cycle of operations, design for racking must be as nearly fool-proof as possible.

In applying rust protective coatings, it pays to devote consideration to fundamental principles governing electroplating. The following vital points should be watched: Choice of deposit; specifications; depth of recesses; shape of inside corners; shielding of one area by another; gas pockets; proper draining; racking; and stability of suspension. Close attention must be given to all these factors if satisfactory results and economical operation are to be obtained.

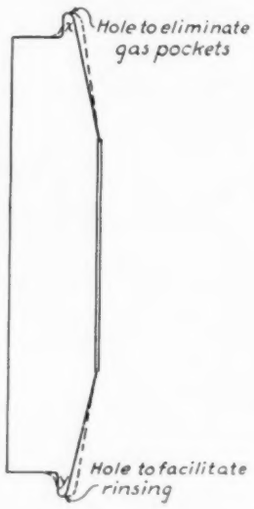

Fig. 6—Long narrow openings that may introduce difficulties in obtaining the proper deposit present a problem which can be overcome by redesigning to open up the area

PERFORMANCE COUNTS

Above is shown a general view of the new pipe shop of the Crane Company at Long Island City, New York, undoubtedly, one of the best equipped pipe shops in the country.

The selection of Landis Pipe Threading and Cutting Machines and Landis Pipe and Nipple Threading Machines for this new shop is particularly significant at this time when methods, standards and costs come in for closer scrutiny than ever before.

Performance counts! Landis Machines are used in this modern pipe fabricating shop for the simple and all important reason that the work produced on Landis threading equipment meets Crane's exacting requirements both for quality and costs. May we tell you what Landis Machines can do for your pipe shop?

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Spherical Tank Is Arc Welded

A SPHERICAL steel mixing tank for gas recently was erected for the St. Louis County Gas Co., Shrewsbury, Mo. Known as the Hortonsphere, the tank is 45 feet in diameter and has a rated capacity of 162,000 cubic feet of gas at 50 pounds per square inch working pressure.

The installation was fabricated and arc welded in the field by the Chicago Bridge & Iron Works, Chicago. The shell plates were dished and edges prepared in the shop; plates were then match marked and shipped to the field for erection.

Tack Welded in Position

A derrick was used to assemble the structure in the field. The plates were hoisted into position and tack welded. The welders then went over all the seams, using four beads on each joint. Each bead was cleaned thoroughly and peened before depositing the succeeding bead.

The sphere has a total of approximately 1256 lineal feet of seams, which, at four beads to the seam, required 5024 feet of welding. Each welding operator was assigned a definite portion of the work and required to mark his welding with a special stamp.

Welding, completed in approximately 14 days, was done by the shielded arc process, using equipment manufactured by the Lincoln Electric Co., Cleveland. Finally, the tank was given a soap suds test under 70 pounds air pressure. No leaks were discovered. Accompanying illustration shows the large sphere in process of being welded.

Standard Grain Size Chart Classifies Steels

A tentative standard chart for classification of S.A.E. and allied structural steels according to grain size has been published by the American Society for Testing Materials under the designation E19-33T. The classification concerns only the size of the pearlitic grains and is independent of the condition of the excess carbide. Specimens were carburized at 1700 degrees Fahr. for 8 hours and cooled slowly to produce a pearlitic structure. Eight pairs of photomicrographs are included, each pair comprising hypoeutectoid and hypereutectoid zones of the steel case. The eight sizes represented are: Up to 1½, 1½ to 3, 3 to 6, 6 to 12, 12 to 24, 24 to 48, 48 to 96 and 96 and over grains per square inch.

Single copies of the chart are available at 25 cents each. On quantity orders special prices are quoted. Requests should be addressed to the society, 1315 Spruce street, Philadelphia.

Nickel Silver Sheet Is Bonded to Chromium

American Nickeloid Co., Peru, Ill., announces a new product known as chrome nickel silver, having the appearance of chromium and being suitable for use in conjunction with chromium-plated fixtures or parts. The material is a high-grade nickel silver sheet bonded to genuine chromium by a special process.

According to the manufacturer, the material is white metal all the way through; is rustproof; is highly resistant to tarnish and discoloration; resists most acids and alkalies; is easily workable; requires no polishing, plating or lacquering after fabrication; wears well; and is less costly than most other alloys.

Chrome nickel silver is produced either in flat sheets and strips or in coils. It can be supplied in any of the common gages and in any size sheet up to 36 by 96 inches and in either a full bright polish or in a satin finish.

Phosphor Bronze Bars Are Machined and Centered

Claimed to eliminate a large part of the expense and labor heretofore required in machining bushings, bearings and bronze parts from bar stock, a new line of cored and solid bars of phosphor bronze bearing metal has been announced by the Bunting Brass & Bronze Co., Toledo, O. The new bars are machined and centered, with outside diameters concentric with inside diameters, eliminating any need for centering the bar stock by the user. Lengths are 13 feet instead of the usual 12 feet.

A.F.A. Announces Chicago Program

COMBINING four days of technical sessions, an exposition of foundry and industrial equipment and visits to A Century of Progress exposition, the annual convention of members of the American Foundrymen's association in Chicago, June 20-23, will find a full program of interesting events.

Tentative program for technical sessions, to be held at the Stevens hotel, is as follows:

Monday, June 19

AFTERNOON

Conference on electric power costs in the foundry. Steel Founders' Society of America, Gray Iron institute and Malleable Iron Research institute co-operating.

Tuesday, June 20

MORNING

Formal opening of convention followed by president's address.

AFTERNOON

"Building for Profits," a dramatization of a foundry's experience with cost methods.

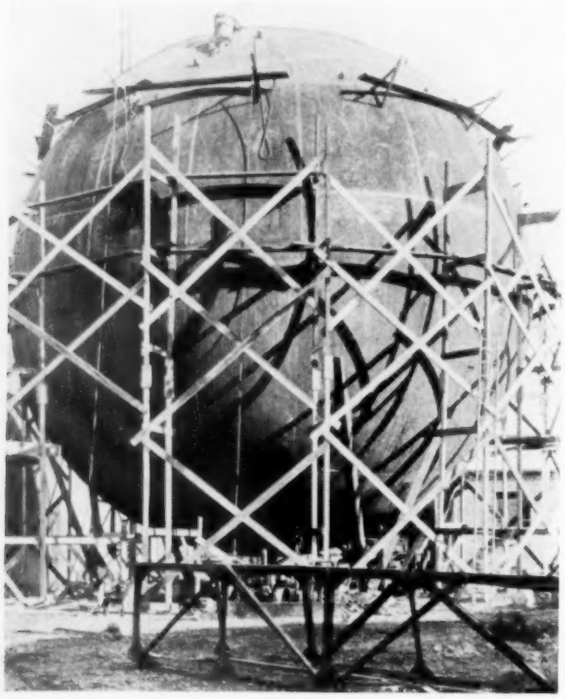
Wednesday, June 21

MORNING

Cast Iron Melting

"Practical Experiences with Electric Furnace Iron," by C. L. Frear, De-

(*Please turn to Page* 60)



THIS 45-foot diameter arc welded steel sphere, with a capacity of 162,000 cubic feet, is to be used as a mixing tank for gas

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part V—Open-Hearth Furnace Lines

(Thirtieth Article of Series)

THE McKune throat design of furnace G is unique in that air for combustion does not enter the furnace via the usual uptakes. Instead a system of dampers directs it through the central port into the throat at A_1 to flow over the incoming fuel. This is the best exposition of "blow-pipe" firing. When flow is reversed, the withdrawal of the dampers presents a normal downtake area.

The area A_1 is taken at the approximate inner end of the fuel port. There is the possibility of a considerable constriction of area at this point. The area is critical only if it is less than A_2. A_1 is shown to be less than A_2 only in the cases of furnaces A, G, I and N. As mentioned previously, it is probable that the true areas A_2 are actually less than as tabulated in the cases of furnaces G and I.

Area A_3 is calculated as that over the bridge walls and the fuel inlet port at their highest point and under the roof at its greatest elevation. In conventional furnaces this area always should be greater than that at A_2. If greater than A_2 it is not a particularly critical area, although a relatively greater area in this location premises easier or less acute air and furnace gas flow lines, an important factor in the maintenance of the end walls and bulkheads.

Area Is Important

The air uptake area, A_6, is the least transverse area in these ducts between the slag pocket and the furnace throat. Ordinarily, it is found in the vicinity of the upper termination of the duct. This area is of considerable importance, particularly as it governs the velocity of the incoming air into the furnace throat and this to a large degree is responsible for combustion conditions and fuel economy.

When fuel is regenerated it reaches the fuel port through an uptake, the area of which is designated A_7 and, as in the case of the air uptakes, is the least horizontal transverse area between the slag pocket and the throat.

Usually, the area is much greater than that of the fuel port A_5, one of the purposes of the larger area being to allow the movement of the fuel

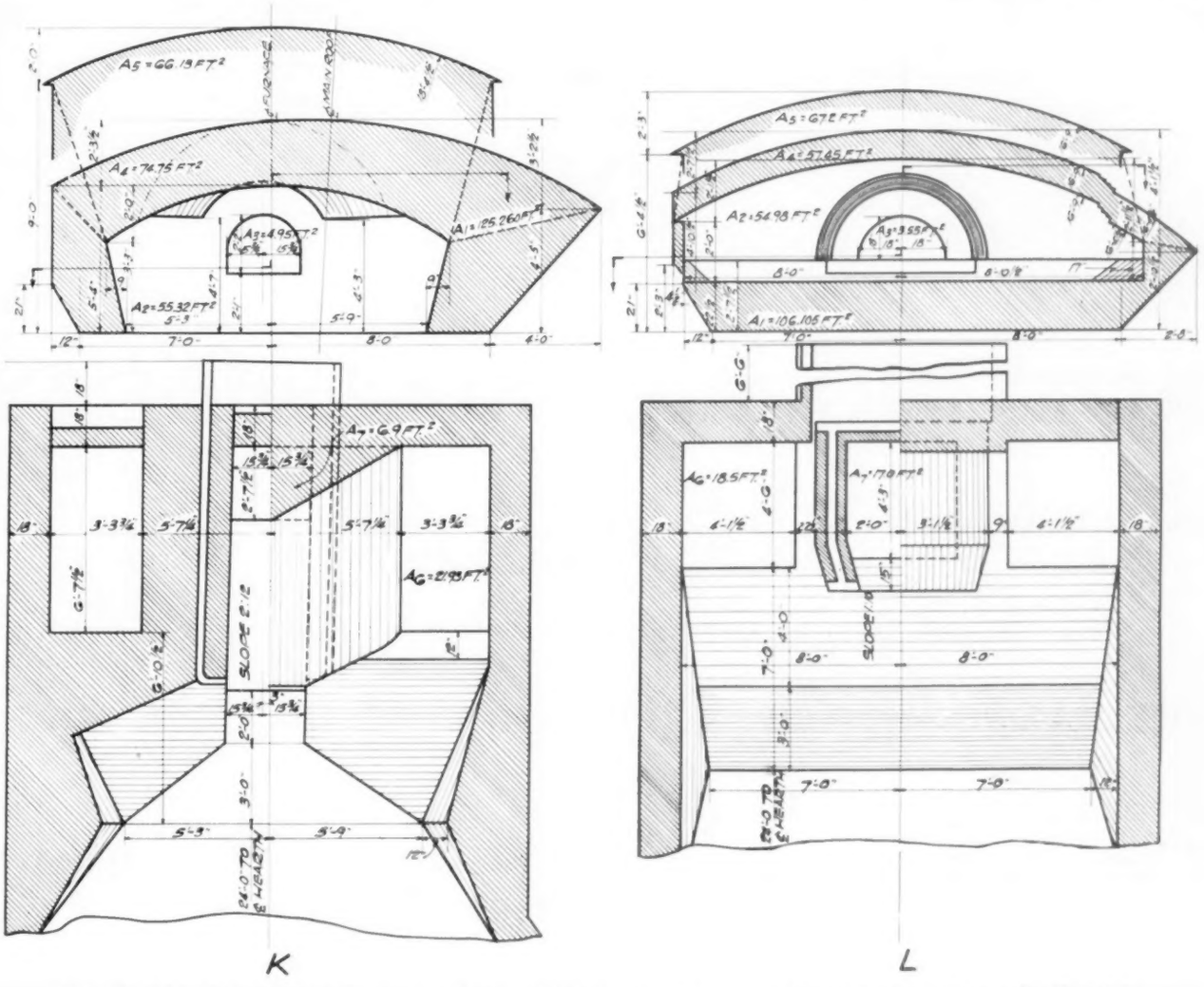
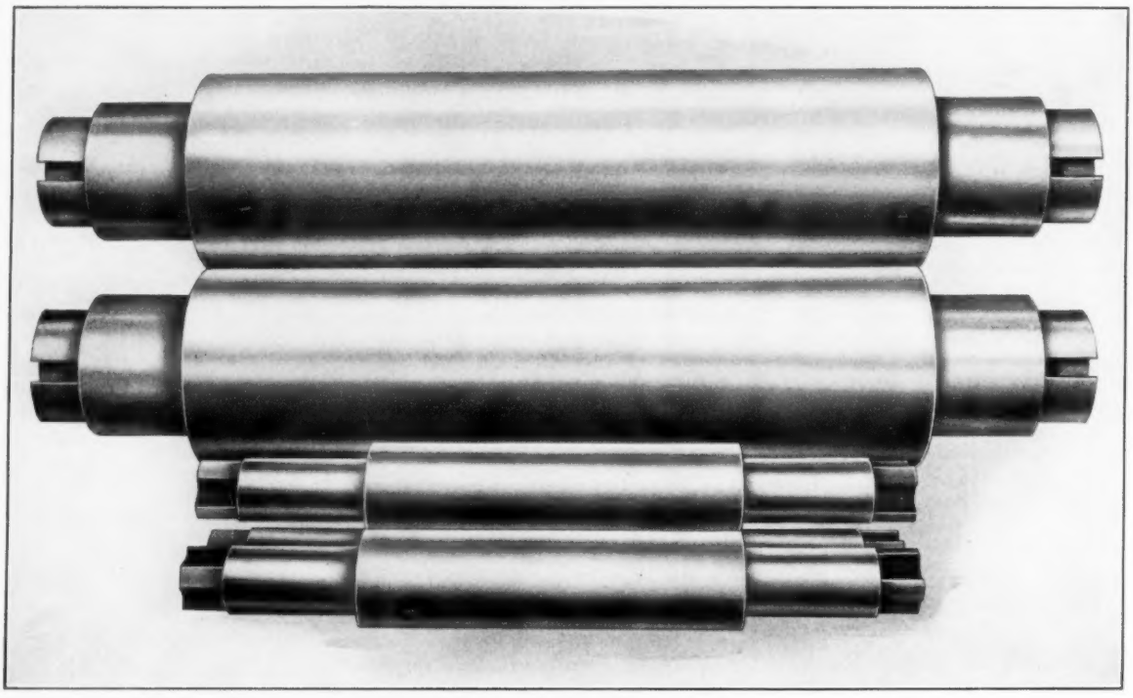


Fig. 45—Principal and critical cross sections and details of uptakes and throats in plan of furnaces K and L

"NATIONAL" ROLL



CHILLED ROLLS FROM 10″ TO 36″ DIAMETER

ROLLING MILL MACHINERY

SPECIAL CHILLED ROLLS
SAND ROLLS

ROLLS

PLAIN CHILLED ROLLS
COLD ROLLS

EXTRA HARD ROLLS FOR BRASS, COPPER, ALUMINUM, ZINC

SPECIAL CONTACT ROLLS FOR FOUR-HIGH MILLS

The National Roll & Foundry Company
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under an increasing static head which results from thermal effect.

In the case of furnaces that originally were designed for firing with regenerated gas but later were adapted to firing with cold fuel, such as furnace I or P, the normal fuel uptake may be used as an added duct for the flow of air.

Area Is Critical

The combined downtake area, A_5, is the sum of A_6 and A_8 or A_7 as may be proper to represent the minimum free area available to pass the outgoing furnace gases into the slag pockets. This is a critical area inasmuch as other factors being equal, a relatively great area, represented as A_5, means an easy fast-working furnace with good throat, bulkhead and end wall life while choking the furnace through a small total area of egress inclines toward the contrary.

The perimeter of the area of the uptakes and downtakes is given because it is an indication of the surface areas over which the gaseous fluids pass and is therefore a measure of the frictional resistance that will be encountered. With a lower ratio of perimeter to area there will be less friction loss and contingently less loss of dynamic head in free-flowing gaseous fluids.

Table LIV

Ratios of Critical Furnace Areas to Throat Area

Furnace	UNITY A_1/A_2	A_2	A_3/A_2	A_4/A_2	A_5/A_2	A_6/A_2	A_7/A_2	A_8/A_2
A	2.320	1.0	0.117	0.974	1.636	0.399	0.233	0.494
B	1.755	1.0	.....	1.290	0.938	0.925	.....	0.925
C	9.880	1.0	1.000	3.075	2.870	2.080	.....	2.120
D	1.660	1.0	.....	.....	1.955	0.693	.....	0.693
E	1.542	1.0	.....	.....	1.214	0.819	.....	0.819
F	1.562	1.0	.....	1.480	1.635	1.051	.....	1.051
G	1.375	1.0	0.207	0.520	1.220	0.247	.....	0.655
H	2.060	1.0	.....	1.000	1.502	1.189	.....	1.189
I	1.776	1.0	.....	1.164	0.907	0.733	0.365	1.098
J	2.470	1.0	0.093	1.212	2.455	1.368	0.280	1.460
K	2.262	1.0	0.089	1.350	1.194	0.791	0.124	0.883
L	1.932	1.0	0.065	1.045	1.225	0.675	0.310	0.985
M	2.185	1.0	.....	1.235	1.445	1.072	.....	1.072
N	2.265	1.0	0.123	0.762	1.440	0.618	0.240	0.740
O	2.740	1.0	0.118	1.075	1.532	0.745	0.231	0.864
P	2.910	1.0	0.207	1.760	3.247	1.383	0.314	1.590

Values Are Tabulated

An important factor in the analyses of furnace cross sections is the relation of the several areas of each furnace to the important area A_2 of the particular furnace and which in the following comparative calculation is valued as 1.0. These relations are given in Table LIV.

Ratios A_1/A_2 and A_5/A_2 always should exceed A_2 in order that gas fluid velocities through the throat will be less than at the knuckle which is logically the area of maximum velocity. The designs shown are correct in 27 of the 32 cases of the 16 furnaces.

Principal and critical cross sections and details of uptakes and throats in plan views of open-hearth furnaces designated *O* and *P* will be presented in next week's issue.

(To be Continued)

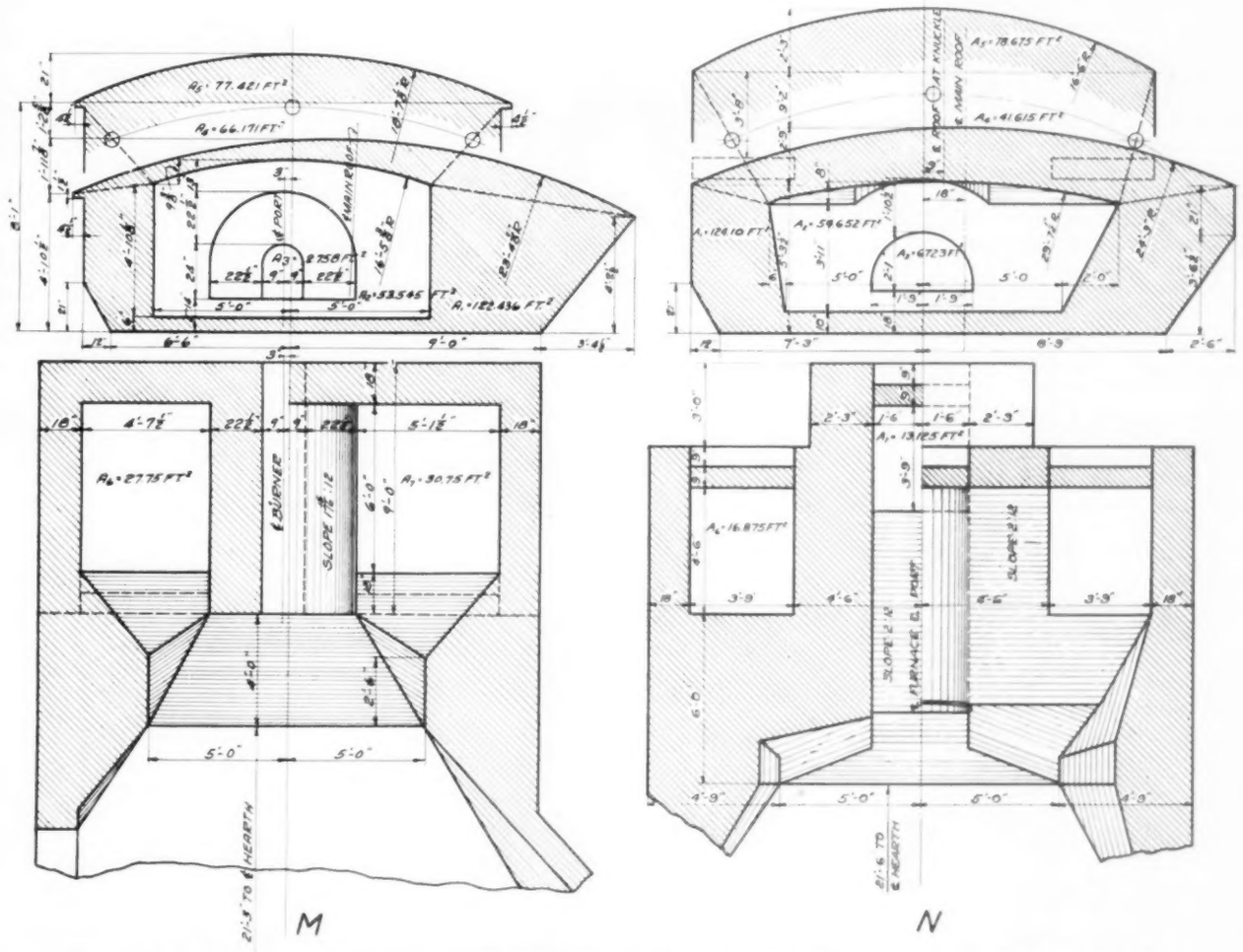

Fig. 45—Principal and critical cross sections and details of uptakes and throats in plan of furnaces M and N

Making the Most of

METHODS AND MATERIALS

A RECENTLY developed cable splicer weighing only about 18 pounds and used for joining the ends of electric cables through the motive power of gun powder has its main body made from a special stainless steel forging of 3 x 3-inch cross section. The upper end is bored to form a cylinder to receive the ram and is threaded for the firing device. In using the press, the two ends of the wire are slipped into a copper muff. A slideable die is removed from the press, the press body is straddled over the muff, the slideable die is replaced and a special 0.38 caliber cartridge containing about 15 grains of nitrocellulose powder is fired by means of a conventional firing pin. The ram is driven down with high speed and tremendous force and the muff and wires are forged into one unit, making a joint stronger than the wire itself and having a greater electrical conductivity. To do the same work in a hydraulic press would require a load of about 25 tons. Special stainless steel was used in the cable splicer body to provide corrosion resistance to weather and hot explosive gases and to afford toughness and strength to resist the large loads and shocks concentrated with so small a machine.

$ $ $

Corrosion-resisting steel now is being used for letters, buttons, and the like, for street signs. The polished metal reflects light and makes the signs easily discernible at night.

$ $ $

FAILURE to drain the water-cooled cast-iron trunnion bearing blocks of an idle cement kiln with the approach of cold weather caused 11 of these blocks to freeze up and fracture. To replace these parts would have cost well in excess of $5000, therefore, repair by oxyacetylene welding was attempted. The blocks weighed approximately 1500 pounds apiece, were about 40 inches square, and the sections to be welded varied in thickness from 2½ to 4 inches. About 8 hours of welding was sufficient to complete each casting with an average consumption of 60 pounds of a new bronze welding rod. The average cost for welding material and labor on each block was $35, and the total cost for all 11 blocks was less than $400.

$ $ $

A new England tool manufacturer learned of the so-called hot acid etch test some 12 years ago and immediately conducted a test on all of its bars of tool steel. As a result, a large number were rejected, some as large as 10 inches in diameter, due to the extreme segregation, dirt, etc., in

this material as revealed through the use of the test. Today practically all of the steel which comes into the plant is acceptable in regard to the hot acid etch test. No high-speed steel has been rejected because of defects revealed by the test, due undoubtedly to more care being used in the manufacture of this higher quality product.

$ $ $

An atmosphere producing equipment developed within the last year to provide an atmosphere of low cost for heat treating furnaces consists of a device for proper mixing of air and gas, a combustion chamber in which the gas is reformed and a cooling coil where excess moisture is removed. Analysis of the gas can be varied from one that is practically neutral to one that is highly reducing in character by varying the ratio of air to gas used. Depending upon the air-gas ratio and the cost of the raw gas used, the cost of the atmosphere produced is said to be very low, approximately 10 to 30 cents per thousand cubic feet when using city gas of about 500 B.t.u. content. For natural gas, the cost is even lower. These atmospheres prove satisfactory for bright annealing of copper and steel parts and for copper brazing.

$ $ $

Application of the wear resisting qualities of austenitic high manganese cast steel in combination with structural steel trackwork has been evolved by an eastern manufacturer. The rails are welded and reinforced with special plates and a solid manganese steel casting is superimposed and welded in place to make a solid unit frog or crossover structure.

$ $ $

IN APPLICATIONS of stainless-clad steel in which some degree of protection or polish is desired on the mild steel side, in addition to that furnished by the stainless surface, the carbon steel side may be given a low-temperature enamel coating, may be protected by aluminum, asphaltic or other resistant paints, or may be plated.

$ $ $

It is now possible to tap threads at ordinary drilling speeds. This is accomplished with a newly-developed high-speed tapping machine capable of operating at speeds of 100 to 300 feet per minute, as compared with former practice of 15 to 35 feet per minute. It is imperative that a rigid spindle be used in high-speed work, a floating spindle causing trouble upon reversal of the tap.

$ $ $

A development of oxyacetylene flame machining is known as flame milling, which consists of sinking a planing cut by means of the planing nozzle to produce a typical milling cut on a steel round. Practically all of the roughing operations, such as turning, drilling, boring, and other types of milling, are being carried out although in some cases still experimentally. Advocates of the process expect that the use of the blowpipe for this type of work will revolutionize practices in the removal of metal, cracks, checks, and other defects from steel castings and forgings, and in preparing vees for butt-type welds in thick plate.

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PROGRESS IN STEELMAKING

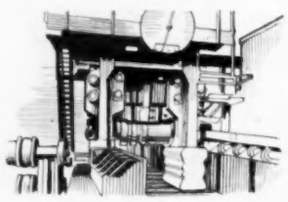
INTRODUCTION of a new liquified petroleum gas to the metal cutting industry on the west coast has been the means of creating steel scrap in charging box sizes for Pacific coast steel mills and foundries from obsolete vessels and cruisers. The gas, which is used in conjunction with oxygen, vaporizes the instant it is released from the supply tank.

♦ ♦ ♦

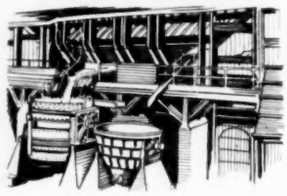
While many types of composition rolling mill bearings require only water for a lubricant, the application of a small quantity of grease and a packing of suet improves their performance, according to an investigation recently completed by a rod producer.

♦ ♦ ♦

Chromador is the trade name of a new grade of steel developed for structural purposes by an English steelmaker. Ultimate tensile strength ranges from 37 to 43 tons per square inch. Chemical composition includes carbon, not exceeding 0.3 per cent; manganese from 0.7 to 1.0; chromium 0.7 to 1.1; copper 0.25 to 0.5; silicon, not exceeding 0.2; and sulphur and phosphorus, not exceeding 0.05 each.



MEANS have been provided for electrically connecting the lubricating systems of blooming, skelp, plate and reversing mills to the mill control. Connection with the reversing control provides for an application of lubricant to the roll necks after each reduction of the piece. The lubricating system also may be connected with the runout table in which event an application of the lubricant is made as each piece is conveyed away from the mill.



PREVENTING the spillage of molten metal at open-hearth departments in case one of the ropes on the main hoist should break while the ladle is being hoisted or transferred from the ladle standards to the pouring bay, is made possible by a recently developed system of reeving. The method also is claimed to lengthen the campaign of the rope from three to five times the life afforded by the old method of reeving.

♦ ♦ ♦

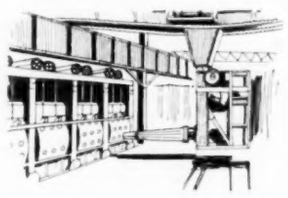
Normal protection against atmospheric conditions and mild solutions of acid, alkalies and brines, is claimed for a new metal primer which gives a peculiar combination iron-oxide, sand-coat finish. The extreme tenacity with which the coating adheres to the surface of steel, affords resistance to mechanical injury.

♦ ♦ ♦

Tool steel ingots now are being cast by a new method at a plant in the Pittsburgh district. The steel is poured into a mold designed with three wings, each spaced 120 degrees apart. The central portion, triangular in cross sections, forms the discard which ingots weighing 5 tons amounts to about 13½ per cent. The triangular central portion being the last to solidify, serves as a feeder for the three joined ingots. When the steel is solidified the ingot is laid on its side and each wing severed from the central core by an oxyacetylene torch manipulated mechanically. About 53 cubic feet of oxygen is used to severe the wings of a 1 ton ingot. The hot top used on the winged-type ingot costs about 33 1/3 per cent less than the type of hot top used on square molds, based on ingots of similar sizes. Experiments disclose that killed steels can be made into ingots with improved soundness and at a cost which compares favorably with standard mold practice.

♦ ♦ ♦

While coarse grinding wheels remove stock from the surface of steel mill rolls at a fast rate, yet subsequent steps involved in finishing the rolls are prolonged, especially when the surface or contour is being redressed. An authority on roll grinding advocates the use of the finest practical wheels for all roll grinding, inasmuch as fine-grit wheels have a larger quantity of cutting points, cause less heat, effect a smoother finish and frequently afford larger production. Economy in roll grinding, therefore, is best attained by using every wheel for both rough and finish grinding.



BLACK paint, which will withstand a temperature of about 1800 degrees Fahr., is of recent introduction for such applications around steel plants as boiler and furnace fronts; breaching; furnace doors; blast furnace shells, stoves, gas washers, dust catchers and gas main systems; and reheating furnaces.

SCANNING THE FIELD OF TECHNOLOGY

A Digest of Important Developments Pertaining to the Production, Processing, Application and Performance of Steel

Metal Cleaning

By Joseph Geschelin, in Automotive Industries, April 15, p. 466, 5 pp., 5 ills., 1 table; part I.

A comprehensive review of the latest developments in methods and materials used in the important field of metal cleaning. This first instalment gives the high spots of the modern metal cleaning problem and also some idea of the materials and methods commercially available. Part II will discuss some of the newer metal cleaning preparations, equipment and special proprietary processes.

—STEEL, 5-1-33

Welding Costs

Bulletin published by Linde Air Products Co., 205 East Forty-second street, New York; 8 pp., 3 ills., 3 tables.

This discussion will interest managers and supervisors who wish to set up methods of figuring oxyacetylene welding and cutting costs best suited to their needs. Three different methods for computing material consumption, and the conditions under which each should be used, are presented in tabular form for ready reference. Examples are given to explain each method.

—STEEL, 5-1-33

111,438 Tons of Steel

The Foundry, April, p. 20, 1 p., 2 ills.

After 15 years of continuous service at the plant of the Sivyer Steel Casting Co., Milwaukee, the world's first electric furnace of the Moore type is being erected as a permanent monument at the Lakeside power plant of the Milwaukee Electric Railway & Light Co. During its life the furnace made a total of 32,844 heats, representing 111,438 tons of steel, and with the exception of a time in 1921 averaged 18 to 20 hours a day.

—STEEL, 5-1-33

Designed Piping

Reprint of a paper presented before the New York section of the American Welding society by F. S. G. Williams of the Taylor Forge & Pipe Works, 50 Church street, New York; 8 pp., 10 ills.

Demonstration of the need for adequate designing in welded piping installations. Flow test data and strength analyses are presented. Emphasis is placed upon the importance of employing only qualified welders, as well as properly designed pipe fittings.

—STEEL, 5-1-33

Cold Rolling

Translation of a reprint of an article by the late Dr. F. Krau in Zeitschrift fur Metallkunde (Germany), September, 1932; supplied by Thomas Prosser & Son, New York; 7 pp., 7 ills.

A new type of roll for the cold rolling of metals is described. Crical roll hardnesses for the rolling of aluminum, copper, nickel, iron are discussed. Consideration is given to chilled iron rolls in general and alloy electric chilled iron rolls in particular.

—STEEL, 5-1-33

Disk Inspection

By G. V. Luerssen, in Transactions of the American Society of Steel Treating, April, p. 343, 8 pp., 2 ills.

Routine disk inspection in quality steel manufacture, presenting the subject of deep etching from the steelmaker's viewpoint. Purpose of disk inspection, and the principles governing the choice of a workable method are discussed. Description of routine practice in a tool and alloy steel mill is outlined.

—STEEL, 5-1-33

Refractories

Abstract of paper delivered before the Co-ordinated Societies by A. T. Green; in the Iron & Steel Industry (England), April, p. 260, 2 pp.

Dealing with refractories used in the metallurgical industries, with special attention devoted to such factors as measure of refractoriness, permeability, action of gases, action of alkalis, influence of slag, erosion, spalling, expansion, etc.

—STEEL, 5-1-33

Two-Ply Stainless

By S. L. Ingersoll, in Product Engineering, April, p. 134, 1 p.

Fabricating and finishing methods applicable to two-ply stainless steel.

—STEEL, 5-1-33

Heat Losses

Foundry Trade Journal (England), March 23, p. 212, 1½ pp., 1 ill., 2 tables.

Heat losses from furnace walls are considered, as well as the advantageous and disadvantageous effects of various insulating compounds. Curves are presented to show the effect of insulation on temperature of an open-hearth furnace roof in still air at 20 degrees Cent.

—STEEL, 5-1-33

Crankshaft Grinding

By Fred B. Jacobs, in Abrasive Industry, May, p. 13, 2 pp., 1 ill.

Finishing single-throw medium size crankshafts from rough stock by grinding. Economy of method is emphasized. Nine steps in the grinding operation are described in detail. The entire process is carried out readily if due care is exercised in designing and making the special fixtures which are required for the work.

—STEEL, 5-1-33

Motor Performance

By James B. Holston, in Machine Design, April, p. 26, 4 pp., 12 ills.

Handicapping a motor by using an improper mounting is almost as detrimental, it is claimed, as specifying an incorrect size of motor. The author outlines how mountings should be specified to obtain maximum motor performance.

—STEEL, 5-1-33

Testing Welds

By J. Raymon Batcheller, in Welding, April, p. 158, 2½ pp., 5 ills.

During the past year further development has taken place in the bridge method of testing welds. Improvements made on a special exploring device have increased the efficiency of the equipment to 89 per cent.

—STEEL, 5-1-33

Instruments

Summary of lecture given before the Co-ordinated Societies by J. B. Fortune; in the Iron & Steel Industry (England), April, p. 239, 4 pp.

Instrument control in the iron and steel industries, with special reference to pig iron manufacture.

—STEEL, 5-1-33

Making Molds and Dies

Machinery, April, p. 533, 1½ pp., 3 ills.

Description of a three-dimensional pantagraph engraving machine for cutting out forming, stamping or forging dies.

—STEEL, 5-1-33

NEW EQUIPMENT

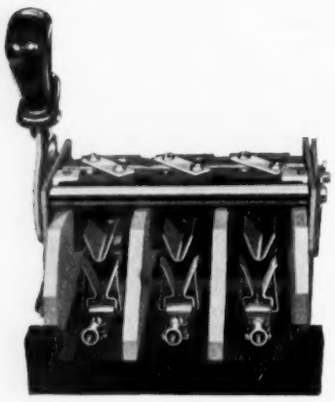
PRODUCTION FABRICATION TREATMENT FINISHING

Compactness Is Feature Of Safety Switch

Electric Controller & Mfg. Co., 2700 East Seventy-ninth street, Cleveland, recently placed on the market a new type A safety switch, shown herewith. Although liberally designed for the severe duty encountered in mill service, these safety units are extremely compact in construction.

Switch mechanism is assembled on a single base which is held in the box by four screws. This permits easy removal of the entire mechanism as a unit for inspection, replacement of parts, or substitution of a new switch. Likewise, although the gutter space is large, the switch can be removed as a unit, if desired, to allow all the space in the box for pulling in wires.

Because of the narrow width of these boxes, the operating handle in



V-blades of E C & M safety switch insure proper alignment

front and the fact that the cover swings vertically requiring no clearance on either side for opening the door, these switches can be mounted in wall recesses, along the wall without interfering with pipes on either side, or arranged in groups without space between.

◆

Adapts New Machines to Bore Steel Parts

Ex-Cell-O Aircraft & Tool Corp., 1200 Oakman boulevard, Detroit, announces that steel now can be bored with both its single and double end precision boring machines. In developing this application it has been found that steel parts which do not exceed a hardness of 250 brinell, 36 scleroscope or 24 rockwell, can be bored successfully, providing the hardness of the steel is uniform, with no hard spots in different sections and that the stock to be removed is well distributed throughout the entire bore. The holding fixture is so designed that two connecting rods can be loaded at each end in a vertical position with the small end of the rod at the top. This enables the operator to load two rods at one end while two rods are being bored at the opposite end, eliminating the loading time.

◆

New Line of Screw Drivers Comprises 13 Sizes

Bonney Forge & Tool Works, Allentown, Pa., has placed on the market a new line of screw drivers which have solid forged one-piece blades, heat treated throughout their entire lengths. Blades are ground and polished, and firmly anchored in the handles. Tips are accurately taper ground and insure a non-slip fit in screw slots. Handles are made of a tough, transparent composition, amber in color, and a nonconductor of electricity. Five styles are produced in a total of thirteen sizes.

◆

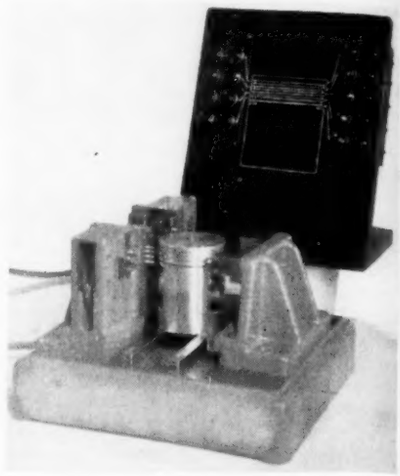
Builds Freight Elevator Door Operator

Quincy Elevator Gate Co., Tiffin, O., is building a freight elevator door operator. Power for operation, transmitted through speed reducers, is supplied by two torque motors designed to stall on the line. Application is direct to the door or gate sheave. Control is from a three-button station on the car. Only the door adjacent to the elevator can be operated.

◆

Electric Gage Checks Several Diameters Simultaneously

Pratt & Whitney Co., gage division, Hartford, Conn., recently has developed a new electric gage for checking a number of diameters simutaneously. As shown in the accompanying illustration the gage is arranged to check nine diameters on an automotive piston. Five of these dimensions are outside diameters, and four are groove diameters. Checking is done by electric contacts arranged to engage the desired surfaces as the piston slides through. When the part is within the desired limits, no lights appear. If the part is oversize the corresponding green light flashes on, or if it is undersize the red light appears as the piston is moved through the contacts.



Pratt & Whitney electric gage has widespread industrial application

◆

Develops Steam Generating Unit For Small Plants

Combustion Engineering Corp., 200 Madison avenue, New York, recently announced its C-E steam generator unit, a standard design built in a range of sizes for capacities of 8000 to 40,000 pounds of steam per hour. Principal features of the unit are economy of first cost and operation, compactness, and its suitability for firing by pulverized fuel, oil or gas. It comprises an assembly of standard equipment, and involves no radical departures from established practice. Its low head-room and small floor space requirements make it particularly suitable for limited space conditions.

The unit comprises a two-drum vertical boiler and a furnace of solid brick walls, the top and front of which are water-cooled by tubes connecting into the upper boiler drum and terminating in a header in the lower front wall.

Markets Stronger; Ingot Rate Doubles in Month

May Pass 30 Per Cent This Week, First Time Since November, 1931—Sheets and Strip Join Upward Price Movement—Motorcar Output Gains

AFTER doubling their operations in April from 14 per cent at the beginning of the month to 29 per cent as an average for last week, steel mills may cross 30 per cent this week, for the first time since November, 1931.

Steel ingot production during the week advanced from 23 to 30 per cent at Youngstown; from 23½ to 26 at Chicago; from 25 to 35 at Buffalo; and from 36 to 41 per cent at Cleveland. While recent gains may have exhausted most of the momentum for the present, nevertheless there is a possibility of a further slight rise this week. Higher operations are scheduled at Cleveland and Buffalo. but an easier trend is apparent at Pittsburgh and Birmingham.

May cannot be expected to supply another 100 per cent increase in the operating rate, but growing demands for practically all iron and steel products, a decidedly stronger tone in prices, and the reinforcement that railroads and additional miscellaneous consumers are beginning to throw behind the automotive industry insure further substantial improvement.

Raw materials continue most active. Not only is the normal melt of pig iron broadening but reluctance of scrap dealers to sell, in view of their sharply rising markets, is also accelerating pig iron requirements. April shipments in the lakes districts expanded more than 100 per cent.

Scrap prices have been further advanced 25 cents to $1 a ton in all markets. Basic iron is up 50 cents a ton at Pittsburgh, bringing it into line with other grades. Chicago furnaces are about to raise their prices, and it now appears that southern iron was increased $2 a ton in eastern Pennsylvania instead of $1. Large inquiries for steelworks iron are developing for the first time in months; one lot of 10,000 tons of bessemer is pending at Pittsburgh.

Strength, first manifest in raw materials, has spread to finished steel prices. Hot-rolled sheets are up $2 a ton and cold-rolled sheets $3, for the duration of the second quarter. Hot-rolled strip has been advanced $2 a ton, and cold-rolled strip is scheduled to go up $3. The first effect of these rises is expected to be heavier covering of definite consumer requirements for second quarter on outstanding protections. Ferroalloys for spot shipment are up $7 a ton.

April production of automobiles, increasing 50 per cent over March, was swept up almost to 200,000 units by a brisk buying movement which is expected to carry May over this mark, and to make it the best month since July, 1931. Ford and Chevrolet each are scheduled for about 60,000 units in May; Plymouth, 25,000. Releases for finished steel are commensurate with this uptrend, and the first cargoes of pig iron on a movement of 125,000 tons for the season for a Michigan automobile company have been shipped from a Lake Erie furnace.

Railroads are chiefly active in negotiating further exchange of scrap for rails, and contemplate a sweeping program for discarding obsolete equipment if satisfactory terms can be arranged. The New Haven railroad has disposed of 20,000 tons of scrap to several mills; Louisville & Nashville, 9000 tons. Missouri Pacific has placed 9000 tons to tie plates.

Structural steel awards for the week, 7405 tons, show a precipitate decline. A tremendous volume of bridge work has accumulated in the states awaiting determination of federal aid. Awards of 187,000 tons of structural steel and cable for the San Francisco-Oakland bridge are expected shortly.

STEEL'S iron and steel composite this week is up 2 cents to $28.20; the finished steel composite has risen 20 cents to $45.10; and the scrap composite, 50 cents, to $8.25.

Composite Market Averages

	April 29	April 22	One Month Ago March, 1933	Three Months Ago Jan., 1933	One Year Ago April, 1932	Ten Years Ago April, 1923
Iron and Steel Composite	$28.20	$28.18	$28.35	$28.68	$29.75	$47.01
Finished Steel Composite	45.10	44.90	45.60	46.13	47.62	66.88
Steelworks Scrap Composite	8.25	7.75	6.47	6.23	7.76	22.95

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	April 29, 1933	Mar. 1933	Jan. 1933	Apr. 1932
Pig Iron				
Bessemer, del. Pittsburgh	$16.26	15.76	15.76	16.76
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	14.19	13.50	13.50	15.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	16.26
No. 2 foundry, Chicago	15.50	15.50	15.50	16.00
*Southern No. 2, Birmingham	12.00	11.00	11.00	11.00
**No. 2X, Virginia furnace	17.75	17.75	17.75	18.00
**No. 2X, Eastern, del., Phila.	14.51	13.76	13.76	15.66
Malleable, valley	14.50	14.50	14.50	15.50
Malleable, Chicago	15.50	15.50	15.50	16.00
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	16.13
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	80.24

*1.75-2.25 silicon. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	1.75	1.75	1.75	2.25
Connellsville, foundry, ovens	2.25	2.25	2.50	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	27.00
Wire rods, Pittsburgh	35.00	35.00	36.20	37.00

	April 29, 1933	Mar. 1933	Jan. 1933	Apr. 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.91
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.70	1.75
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.50	1.60	1.60	1.60
Tank plates, Philadelphia	1.54½	1.59½	1.66	1.79½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.55	1.55	1.65	1.70
Sheets, No. 24, hot ann., Pitts.	2.00	2.00	2.05	2.20
Sheets, No. 24 galvan., Pitts.	2.70	2.60	2.70	2.85
Sheets, No. 10 blue anneal., Chi.	1.70	1.70	1.85	1.85
Sheets, No. 24 hot ann., Chicago	2.15	2.15	2.25	2.35
Sheets, No. 24 galvan., Chicago	2.85	2.75	2.85	3.00
Plain wire, Pittsburgh	2.10	2.10	2.15	2.20
Wire nails, Pittsburgh	1.85	1.85	1.90	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$10.75	8.75	8.35	10.20
Heavy melting steel, eastern Pa.	8.00	6.50	6.50	7.20
Heavy melting steel, Chicago	7.75	5.25	5.25	6.55
No. 1 wrought, eastern Pa.	8.25	6.75	6.50	7.95
No. 1 wrought, Chicago	7.00	5.00	5.00	5.85
Rails for rolling, Chicago	9.25	7.85	8.05	8.90

Sheets

Hot-Rolled Up $2, Cold-Rolled $3 for This Quarter Only—More Demand for Protection

SHEET PRICES, PAGE 45

Pittsburgh—All hot-rolled sheets have been advanced $2, effective immediately for the remainder of the second quarter only. All cold-rolled sheets have been advanced $3 per ton, also for the remainder of the quarter, making No. 10 gage 2.05c and No. 20 2.45c. This move is expected to accentuate the insistence of consumers for advance coverage. Mills thus far are not believed to have gone beyond June 30. Several individual orders for 1000 tons each were placed last week. Although galvanized sheets are generally untested at 2.70c, the 2.60c base at which customers were allowed to contract before the advance, is uniform. Allegheny Steel Co. has been awarded 700 tons of deoxidized sheets for Pennsylvania license tag requirements at 2.416c, delivered western state penitentiary, Woods Run, Pittsburgh.

Cleveland — Miscellaneous sheet requirements are providing mills with larger tonnages, though automotive continue to dominate, mainly from Chevrolet, Ford and Chrysler. The local mill, operating at 40 to 50 per cent, and an adjacent lake mill now at 60 per cent, are working chiefly on automotive specifications, with some orders from refrigerator and barrel manufacturers. In the immediate Cleveland district automotive orders form only a small portion of total sheet bookings—5 per cent for one important interest. Improved steelworks operations here are ascribed largely to associated sheet mill requirements. The market is stronger. Mills are covering only firm orders for second quarter, and issuing quotations, subject to withdrawal at any time.

An inquiry has been issued by the federal government for 25,000 wheelbarrows for the reforestration camps, which will require several hundred tons of black sheets.

Chicago—Advances of $2 a ton on hot-rolled sheets and $3 on cold-rolled material are announced by the Inland Steel Co. This follows the recent rise of $2 a ton on galvanized. Business the past week lacked improvement, with some decrease noted in automotive tonnage. Buying has tended toward better diversification, although miscellaneous consumers are furnishing only small lots. Mill operations have yet to reflect a quieter situation in buying, holding around 35 to 40 per cent.

Bids close May 8 with the Texas board of control, Austin, Tex., on automobile number plates requiring approximately 1000 tons of sheets.

Mississippi takes bids May 10 on 1934 requirements of automobile plates.

New York—Sheet sellers report a material gain in buying. A good tonnage is going into refrigeration equipment, and there is a better flow of tonnage in several directions. Prices generally are firm.

Philadelphia—Further substantial orders for autobody sheets are noted, with old protections apparently still being observed. Apart from this class of work, new prices appear to be generally observed.

Cincinnati — Miscellaneous demand for sheets is maintained. An expected seasonal impetus for galvanized sheets has not developed fully, although better prices for southern raw materials may bring out a pent-up demand from that source soon.

St. Louis—Large buyers of sheets have not increased their commitments to any noticeable extent, but purchasing by miscellaneous users is accounting for considerable tonnages, and sales are well maintained.

Birmingham, Ala.—Demand has not been accelerated by talk of higher prices and mill operations and shipments are unchanged.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

*Pittsburgh, base	1.40c to 1.50c
Chi. dist. mills	1.50c
Chicago, del.	1.55c
New York, del.	1.75c
Birm., base	1.55c
Philadelphia, del.	1.71c

HOT ROLLED ANN. No. 10

*Pittsburgh, base	1.55c to 1.65c
*Chi. dist mills	1.65c to 1.75c
*Chicago, del.	1.70c to 1.80c
*Phila., del.	1.86c to 1.96c
*New York, del.	1.90c to 2.00c
*St. Louis, del.	1.89c to 1.99c
*Birm., base	1.70c to 1.80c
San Fran., c.i.f.	2.32½c

HOT ROLLED ANNEALED No. 24

*Pittsburgh, base	2.00c to 2.10c
*Chi. dist. mills	2.10c to 2.20c
*Chicago, del.	2.15c to 2.25c
*New York, del.	2.35c to 2.45c
*Phila., del.	2.31c to 2.35c
*Birm., base	2.15c to 2.25c
*St. Louis, del.	2.34c to 2.44c
San Fran., c.i.f.	2.85c

GALVANIZED No. 24

Pittsburgh, base	2.60c to 2.70c
Chi. dist. mills	2.80c
Chicago, del.	2.85c
Philadelphia, del.	3.01c
New York, del.	3.05c
*Birm., base	2.75c to 2.85c
St. Louis, del.	3.04c
San Fran., c.i.f.	3.50c

TIN MILL BLACK No. 28

Pittsburgh, base	2.30c
Gary, base	2.40c
St. Louis, del.	2.64c

HEAVY COLD ROLLED No. 10

*Pittsburgh, base	1.90c to 2.05c
*Chi. dist. mills	2.00c to 2.15c
*Chicago, del.	2.05c to 2.20c
*Philadelphia, del.	2.21c to 2.36c
*New York, del.	2.25c to 2.40c

COLD ROLLED No. 20

*Pittsburgh, base	2.30c to 2.45c
Do, autob. qual.	2.55c to 2.70c
Do, furn. qual.	2.90c to 3.05c
*Chi. dist. mills	2.40c to 2.55c
*Chicago, del.	2.45c to 2.55c
*Philadelphia, del.	2.61c to 2.76c
*New York, del.	2.65c to 2.80c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh

Tin plate, coke base, contract	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.75c

Gary base, 10 cents higher.

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
New York, del.	1.60c to 1.70c
Phila., del.	1.49½ to 1.59½
*Boston, del.	1.72c to 1.82c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Birmingham, base	1.75c
Coatesville, base	1.40c to 1.50c
Pacific Coast, c.i.f.	2.00c
St. Louis, del.	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawan., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.95c
Boston, del.	2.02c
Pitts., cold finish	1.70c
Pitts., forg. qual.	1.75c and 1.85c
San Fran., c.i.f.	2.10c

RAIL STEEL

Pitts., Buff., St. Louis	1.30c
Chicago, base	1.50c
Eastern mills	1.30c

IRON

Chicago, base	1.60c to 1.65c
New York, del.	1.85c to 1.90c
Philadelphia, del.	1.81c to 1.86c
Pitts., refined	2.70c to 4.20c

REINFORCING

*New billet steel, Chi., Pitts., Buff., Cleve., Birm. (cut lengths)	1.55c
Chicago, rail steel	1.30c
Phila., cut lengths	1.86c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher with 10% discount off extras; joint carloads 10 cents higher with no discount from extras; pool carloads 20 cents up; less carloads 30 cents up.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.85
Cement coated nails	1.85
Galvanized nails	3.35

(Per pound)

Polished staples	2.55c
Galvanized fence staples	2.80c
Barbed wire, gal.	2.35c
Annealed fence wire	2.25c
Galvanized wire	2.60c
Woven wire fencing (base column, c.l.)	$50.00

(To Manufacturing Trade)

Plain wire, 6-9 ga.	2.10c
Spring wire	3.10c

Anderson, Ind., $1 over Pitts.-Cleve.; Chicago, Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Cold-Finished Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.70c
20,000 to 59,999 lbs.	1.65c
60,000 to 99,999 lbs.	1.60c
100,000 lbs. and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Shafting

Cumberland, Md., base

1⅛-inch	3.00c
1⅛ to 1½-inch	2.50c
1⅝ to 1⅞-inch	2.20c
2⅛ to 6-inch	2.05c

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20

4100 .15 to .25 Mo.	0.50
4600 .20 to .30 Mo.	1.25-1.75
Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	0.20
6100 bars	1.20
6100 spring	0.95
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 (flats)	0.25
9250 (rds., sq.)	0.50

Strip, Hoops, Bands

*Hot-rolled strip up to 23 15/16-in. wide, Pitts.	1.45c to 1.55c
Do., Chicago	1.65c
Do., del. Phila.	1.86c
Do., del. N. Y.	1.90c
Cooperage hoop, Pittsburgh	1.55c to 1.65c
Do., Chicago	1.65c to 1.70c
Cold-rolled strip, Pitts., Cleve.	1.80c to 2.00c
Worcester, 3 tons or over	2.10c

Rails, Track Material

Stand. rails, mill	$40.00
Relaying rails, Pitts., 20-45 lbs.	$20.00 to 22.00
50 to 75	$16.00 to 18.00
80 to 100	$20.00 to 21.00
Light rails, 25-45, mills	$30.00
Light rails, Chi.	$32.00
Angle bars, mills	2.55c
Spikes, R. R. mills	2.15c
Spikes, boat, b'ge, Pitts.	2.65c
Track bolts, Chi.	3.50c
Do., stand., job.	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chi.	$35.00

Rivets, Wrought Washers

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chi.	2.35c
7/16-in. & smaller, Pitts., Chi., Cleve.	70, 10 and 10 off
Washers, c.l., Pitts. dist.	6.50 to 6.75 off
Do., Chi. dist.	7.25 to 7.00 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots, Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	75 off
Rolled thread ½ x 6 and smaller	75 off
Eagle list	75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	75 off
Tire bolts	60 and 10 off
Stove bolts, 75, 25 and 10 off in pkgs.; 86 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller	75 off.

NUTS

Semifinished	75 off

HEXAGON CAP SCREWS

Milled	85-10 off
Upset 1-in. diam., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10-10 off
Headless set screws	80 off
Upset, larger than 1-in.	80 off

Cut Nails, Piling

Cut nails, c.l., Pitts.	$2.50
Do., less carloads, 5 kegs or over	$2.90

Steel piling, Pitts. 1.90c to 1.95c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

All discounts are net.

BUTT WELD
Steel

In.	Blk.	Gal.
¼ and ⅜	60½	42
½	65½	54
¾	69	59
1—3	71	62

Iron

⅛	31½	15
¼	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD
Steel

2	66	57
2½ to 6	69½	60½
7 and 8	68	58
9 and 10	67	57
11 and 12	66	56

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

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RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932, except Buffalo del. at Boston. Asterisk denotes price change.

LINE PIPE

Steel

⅛-inch, butt weld	54
¼—⅜, butt weld	59½
½, butt weld	64½
¾, butt weld	68
1—3, butt weld	70
2-inch, lap weld	65
2½—6, lap weld	68½
7—8, lap weld	67
9—10, lap weld	66
11—12, lap weld	65

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra. 2-inch line discount unchanged from list prior to April 15, 1933.

BOILER TUBES

C. L. Discounts, f.o.b., Pitts.

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts same as for hot rolled, below. Charcoal Iron—Under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

Cold Drawn

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

Hot Rolled

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs. 40%
15,000 ft. or 22,500 lbs. 70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$32.00-33.00
4-in. Birm.	35.00-36.00
4-in. Chicago	43.40-44.40
6 to 24-in. Chicago	40.40-41.40
6-in. & over, N. Y.	32.00-34.50
4-in. New York	34.50-36.50

Class A pipe $3 over Class B.
Stand. fitgs., Birm. base...$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago, furnace	$15.50
Pitts., dist. fur.	15.00
Pittsburgh, del.	15.63-16.13
Valley furnace	14.50
Cleve. fur., local del.	15.00
Philadelphia del.	14.26
Virginia furnace	17.25
Granite City, Ill.	15.50
Buff., fur., local del.	16.00
*Buff., all-rail, Bost.	19.05
Do, Brooklyn	18.90
Do, Newark	17.28
Ala., Birmingham	12.00
Ala., del. Chicago	16.01
Ala., del. St. Louis	15.85
Ala., del. Cincinnati	15.82
*Ala., Phila., dock del.	17.00-17.25
*Ala., Balt., dock del.	17.00
*Ala., N. Y. dock	17.50
*Ala., Bost. dock del.	17.50-17.75
Tenn., Bir. base	13.00
Tenn., del. Cinci	15.82
Montreal, del.	23.00-23.50
Toronto, del.	22.10

FOUNDRY, No. 2X

Buff., fur., local del.	16.50
Buff., all-rail, Brook.	19.40
Do, Newark	17.78
*Buff., all-rail, Bost.	19.55
Virginia furnace	17.75
Eastern, del. Phila.	14.51

FOUNDRY, No. 1X

Buff. fur., loc. del.	17.50
Eastern, del. Phila.	14.76

MALLEABLE

Valley furnace	14.50
Cleve. fur., loc. del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, del.	15.63-16.13
Chicago, furnace	15.50
Buff., fur., loc. del.	16.50
Eastern Pa., del.	15.13-18.91
Granite City, fur.	16.00
Montreal, del.	24.00
Toronto, delivered	22.60

BASIC

*Pitts., dist. fur.	14.50
*Pittsburgh, del.	15.13-15.63
Eastern Pa., del.	14.00-14.25
Buff. fur., loc. del.	15.50-16.00
Montreal, del.	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	15.00
Pittsburgh fur.	15.50
Pittsburgh, del.	16.13-16.63

LOW PHOS.

*Valley, fur., stand.	23.00-24.00
Phila., standard	22.76-25.79
Copper bear., E. Pa. furnace	20.50-21.50

GRAY FORGE

Valley furnace	14.50
Pitts. dist. fur.	15.00
Pittsburgh, del.	15.63-16.13

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., fur. 7%—$18.50; 8—$19; 9—$19.50; 10—$20; 11—$21; 12—$22; 13—$23; 14—$24; 15—$25; 16—$26; 17—$27.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., 10%—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.80
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
No. Afr. low phos.	7.00
Swedish basic, 65%	7.50- 8.00
Swedish low phos.	8.00
Spanish, No. Afr. basic, 50 to 60%	7.00
Tungsten, spot, sh. ton unit, duty pd.	$9.65- 9.90
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton c.i.f.	$15.50-16.50

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	nominal
So. African, 52%	18 to 19 cts.
So. Afr., 49-51%	nominal
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Ala.	$35.00
Missouri	35.00

Second Quality

Pa., O., Ill., Ky., Md.	30.00
Missouri	30.00
Georgia, Alabama	30.00

MALLEABLE BUNG BRICK

All bases	40.00

SILICA BRICK

Pennsylvania	$35.00
Joliet, E. Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton, 9 x 4½ x 2½

Burned	$61.50
Unburned	52.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$42.50

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	38.00
Domes, Chewelah, Wash., base	20.90

Fluorspar

85 to 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$10.50
Washed gravel, import duty paid tide, gross ton	$17.50

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.	1.50c-1.60c

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$1.75
Connellsville fdry.	2.25- 2.50
Connell. prem. fdry.	4.00
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21- 8.81
Chi. ov., outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, ovens Connell. basis	4.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82% tidewater, duty pd.	$68.00
del. Pitts.	73.24
Spiegeleisen, 19-20%, dom. fur., spot†	24.00
Ferrosilicon, 50%, freight all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.	0.94- 1.00
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, c. l. 17-19%. Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton c. l., 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity.

Bars

Users Seek Future Coverage—Strength Presages Advance in Price—Sales Increase Slowy

BAR PRICES, PAGE 45

Chicago—Bars continue most active of heavy steel products and sales and specifications the past week maintained the gradual upturn noted throughout this month. While automotive requirements lead, there has been a moderate gain in demand from many smaller consumers. Rail steel bars are moving better although fence posts are quiet in farm areas. Railroad bar needs for repair work continue poor, while orders from farm implement builders are unimproved. The market on soft steel bars is steady at 1.70c, Chicago, with prospects for higher prices more pronounced. Speculative buying has yet to become noticeable, buyers limiting orders to prompt needs. Rail steel bars are steady at 1.50c, base.

Pittsburgh—In absence of definite announcement changing the base on carbon steel bars from 1.60c, buyers are attempting to anticipate requirements and ask full contract coverage at this figure for as long as mills will protect them but producers will not quote on bars for shipment later than June 30. With a continuation of the present rising demand, which is well diversified, an advance in the bar market is not unlikely. Alloy bars share in the requests for contract coverage, but remain 2.45c to 2.65c, base, mill.

Cleveland—Further moderate improvement is apparent in the market for commercial steel bars. Vessel shipments from Cleveland to Michigan automotive manufacturers have started. An important interest's bookings of all finished steel products for April, including a substantial portion of bars, are the largest since the spring of 1932. Commercial steel bars are firm at 1.65c, base, Cleveland.

Boston—Commercial steel bars are steady at 1.60c, Pittsburgh, with a slight gain in buying. Consumers have light stocks and needs are quickly reflected in small lot inquiry.

New York—Commercial steel bars are being specified more freely by jobbers and some increase from manufacturing lines.

Philadelphia—Although firm in price, commercial steel bars are moving slowly. Lack of railroad buying is severely felt and recent improvement has been purely miscellaneous in character. Steel bars are 1.60c, Pittsburgh, or 1.91c, delivered, Philadelphia, and common iron bars 1.50c, Pittsburgh or 1.81c, delivered.

Cold-Finished Users Show More Interest in Needs

Cold Finished Prices, Page 45

Pittsburgh—Consumers are placing heavier orders for cold-finished bars for May release, and May probably will be the best month of 1933, so far in specifications and shipments. A strong trend is noted in the market in that miscellaneous users of cold-finished steel are buying more heavily, the same as the automotive industry. There appears no immediate likelihood of an advance in the 1.70c base on cold-finished bars.

New York—Frankford, Pa., arsenal has bids on approximately 100 tons of cold-drawn screw stock, 245,000 feet, for bullet cores.

Tin Plate Releases Heavier

Tin Plate Prices, Page 45

Pittsburgh—Tin mill schedules have expanded further, so that the average is a strong 55 per cent, up 5 points. Specifications are being released a little more freely, one mill receiving around 9000 tons one day last week. The tin plate base of $4.25 is not subject to report of early upward revision, although tin mill black at 2.30c may be advanced.

New York—Tin plate specifications here are the heaviest so far this year. Exports are light, though prospects are brighter.

Plates

Light Buying Rules, with Most Important Consumers Taking Little—Barge Bids Are Low

PLATE PRICES, PAGE 45

Pittsburgh—Plates continue weak at 1.50c to 1.60c base, Pittsburgh, with little tonnage in the market. Railroad buying still is practically absent and considerable tank work is held up on account of delayed government loans. Bids reflecting low plain material prices and shop costs were noted when Memphis, Tenn., engineers opened tenders April 26 for two large dredges which will require 1500 tons of plates. The government estimate was $517,276 for one and $982,826 for both, but the Marietta Mfg. Co., Pt. Pleasant, W. Va., bid $456,000 for one and $891,000 for two. Dravo Contracting Co., Neville Island, Pittsburgh, bidding $973,500 for both, was second and Midland Barge Co., Midland, Pa., estimated both at $1,251,200.

Cleveland—Small lots of plates are in better demand, especially for tank work, including brewery requirements. Boilermakers report few orders from the large utilities. Prices on small specifications are steady at 1.60c, base, Pittsburgh.

New York—Brewery buying and miscellaneous tank work accounts for a further mild improvement in plates. Prices are unchanged but consumers are more active in obtaining protection over the quarter.

Chicago—Plate orders still involve only small lots, principally for miscellaneous use. Poor outlook for increased business in railroad and oil equipment leaves the market with little prospects for heavier tonnages from these sources. A few small lots still are being received for brewery work. Plates are fairly well maintained at 1.70c, Chicago.

Boston—Plate orders have increased. Individual orders are small with an occasional carload. Sentiment has improved. Most business is near 1.50c, Coatesville, Pa.

Philadelphia—Bids have gone in on gas holder work for the Philadelphia Gas Co., requiring about 3500 tons. The work will involve one new gas holder and an addition to an existing gas holder. Buying continues spotty, with prices unchanged at 1.40c 1.50c, Coatesville, Pa., or 1.49½c to 1.59½c, delivered, Philadelphia.

Contracts Placed

125 tons, tank, Falstaff Corp. brewery, to St. Louis Structural Steel Co., St. Louis.

110 tons, department of plants and structures, New York, to Egleston Bros. & Co. Inc., Long Island City, New York.

Contracts Pending

7000 tons, 20 miles of 38 to 42-inch welded pipe for Pine Canyon dam,

Pasadena, Calif.; bids in July.
3500 tons, tank work, Philadelphia Gas Co., Philadelphia; bids in; construction not likely before fall.
1500 tons, two 244 x 52 x 9 foot dredges for Memphis, Tenn., federal engineers; Marietta Mfg. Co., Pt. Pleasant, W. Va., low for one at $456,000, for two $891,000.
150 tons, three tanks for metropolitan water district, Los Angeles; bids opened.
Unstated tonnage, 100 acetylene cylinders, each of 1060 cubic feet capacity; bids May 5, superintendent of lighthouses, Staten Island, N. Y.
Unstated tonnage, one 93-foot flat-deck steel scow, lighthouse bureau, Buffalo; McClintic-Marshall Corp., Bethlehem, Pa., low, $16,025.

Strip

Most Buyers Covered Before Advance of $2 Was Made

Strip Prices, Page 45

Pittsburgh—Hot-rolled strip steel was advanced $2 a ton on a Pittsburgh base effective April 27. This price does not apply to prior contracts, nor is it intended for third quarter necessarily. There is no definite determination of the cold-rolled strip market. Cooperage stock is up $2 a ton in conformity with hot-rolled strip. Strip steel buying is much heavier. An inquiry is prevalent here for 500 tons of desirable sizes of hot-rolled for third quarter, provided 1.45c is granted. Mill activity here is better and two independents were operating full last week.

Cleveland — Specifications from leading automobile builders continue to provide strip mills with good backlogs, and tonnage from miscellaneous sources also shows further improvement. Because many consumers have covered for second quarter requirements of hot-rolled strip at 1.45c, base, Pittsburgh, and others still are being given the opportuntiy to protect themselves at this price, the advance to 1.55c, announced at Pittsburgh, will not be fully applicable immediately. Some sellers here, in fact, continue to quote 1.45c, though expecting to advance. Cold-rolled continues 1.80c to 2.00c, the latter price applying to small lots.

Chicago—Producers have advanced the price of hot strip $2 a ton, effective April 26, to 1.65c, Chicago. Cold-rolled strip continues 1.80c to 2.00c, Pittsburgh-Cleveland. Full effects of the hot-strip advance will not be felt until third quarter since contracts are in effect until then at old prices. Business the past week retained previous gains with additional improvement noted in some directions. Demand is broader with miscellaneous consumers better represented than formerly on order books, although automotive tonnage still leads.

Republic Steel Corp. has been awarded 124 tons of cold-rolled strip, 0.025-inch thick and 1.1875 inches wide, at 4.48c, delivered, Rock Island, Ill., arsenal, in 100 pound coils.

Boston—Some cold-rolled strip mills booked more business last week than in any like period in 18 months. Prices are firm at 2.10c, Worcester base.

New York—Sellers of hot-rolled strip have advanced prices $2 a ton, to 1.55c, Pittsburgh, or 1.90c, delivered, New York. Talk continues of an impending advance in cold-rolled strip, which continues at 1.80c to 1.90c, Pittsburgh, or 2.15c to 2.25c, New York. Most consumers of hot strip are protected for the quarter at 1.45c, Pittsburgh, so that the new price may not be tested for the present.

Philadelphia—An increase of $2 a ton on hot strip, to 1.55c, Pittsburgh, or 1.86c, delivered, Philadelphia, features strip. Cold-rolled strip continues at 1.80c to 1.90c, Pittsburgh, or 2.11c to 2.21c, Philadelphia, with indications pointing to an advance in this material later. Business has increased modestly. While radio buying still leads, better interest generally is shown.

Railroads

Small Repair Lots Give Most Of Present Buying

Track Materials Prices, Page 45

Small purchases for repair and maintenance make up practically all current buying by railroads, much of this being regular quarterly coverage. Aside from this the Missouri Pacific has placed 9000 tons of tie plates, and another southwestern road 1000 tons. An inquiry for 10,000 tons of 35-pound rails for export to China is being considered by mills in this country but it is expected it will be placed in Europe. Central Supply Co., Philadelphia divided repairs to 100 hoppers and 50 gondolas among four builders.

Edgar Thomson rail mill of the Carnegie Steel Co. was expected to complete its current rolling late last week. This was principally on an initial release of rails for the Erie. Nickel Plate and Chesapeake & Ohio inquiries are not expected in the market before third quarter. Rail mills at Chicago continue rolling on a slow schedule. Car wheels are in better demand than other repair supplies. Pennsylvania railroad is noncommital on the reported trade of scrap for steel rails but an announcement is expected.

Placing of 50 oil tank cars with the National Steel Car Co., Hamilton, Ont., by the British American Oil Co. is the first order of consequence to this builder this year. The cars will be constructed at Hamilton, Ont.

Car Orders Placed

British American Oil Co., 50 Oil tank cars, to National Steel Car Co., Hamilton, Ont.
Central Supply Co., Philadelphia, repairs to 100 hopper cars and 50 gondola cars, distributed to Virginia Bridge & Iron Works, Roanoke, Va.; Bethlehem Steel Co., Bethlehem, Pa.; Greenville Steel Car Co., Greenville, Pa.; and Pressed Steel Car Co., Pittsburgh.
Wilson Carline, 50 refrigerator cars, to own shops in Chicago.

Rail Orders Placed

Lackawanna, 2000 tons, to Bethlehem Steel Co., Bethlehem, Pa.

Locomotives Pending

Chief of engineers, Washington, one 25-ton gasoline electric drive locomotive, one 18-ton gasoline mechanical drive and one eight-ton; bids May 8.

Rail Orders Pending

Board of transportation, New York, has bids on approximately 400 tons of spare frogs and switches.
Export to China, 10,000 tons 35-pound rails.

Wire

Orders Improve, Prices Firm and Increase Likely

Wire Prices, Page 45

Chicago—Wire specifications and shipments continue to improve with demand for manufacturers' wire relatively better than that for barbed wire, fencing and other products used in agricultural districts. April showed a fairly substantial gain in tonnage compared with March. Prices have strengthened, with higher levels regarded as not unlikely. Standard wire nails continue $1.90 in carloads with plain wire 2.15c.

Worcester, Mass.—Demand for wire is broader. Prices are firm with plain wire 2.20c, Worcester. Volume in specialties has gained, but cable lags. Wire Rope Corp. of America, New Haven, Conn., is low and has received contracts for several hun-

dred tons of rope for the navy and Panama, totaling close to $25,000.

Pittsburgh—Although leveling off somewhat the past week, average specifications for wire mill products appear strong and well sustained. Evident strength in prices is current and many orders are taking the full market price without question. Nails are moving better on contracts.

Cleveland—Demand for manufacturers' wire is holding up to its recent improved level. Some mills still are working on specifications issued against first quarter contracts, and until these are out of the way little new contracting is expected. Prices are steady.

Bolt, Nut Protection for Last Half Is Sought

Bolt, Nut, Rivet Prices, Page 45

Irregular improvement is evident in the bolt, nut and rivet market, makers at Cleveland experiencing a 50 per cent increase in April over March, Pittsburgh producers a small gain and Chicago sellers finding almost no change. Jobbers are taking somewhat more to complete their stocks but railroads and agricultural implement builders are not taking more than small, occasional lots.

Automotive buying is steady and inquiries for third and fourth quarters at current prices continue to be made. No selling has been done beyond second quarter, as far as is known. An advance for later delivery may be made soon. Prices are steady at 75 off for bolts and nuts and for rivets 2.25c, Pittsburgh, and 2.35c, Chicago.

Warehouse

Rise in Galvanized Sheets Expected—Sales Make Gain

Pittsburgh—Galvanized sheets out of warehouse in this district are expected to be advanced as the mill price now effective is $2 a ton higher. Inquiry for steel products from stock is considerably heavier and requests for prices on large tonnages are in the market.

Chicago—Sales volume is well maintained with improvement in size of individual orders. Business is well ahead of the March volume.

Boston—Warehouse sales gained slightly in April. Sentiment has improved. Prices are firm. Boston jobbers have made no changes in sheet prices.

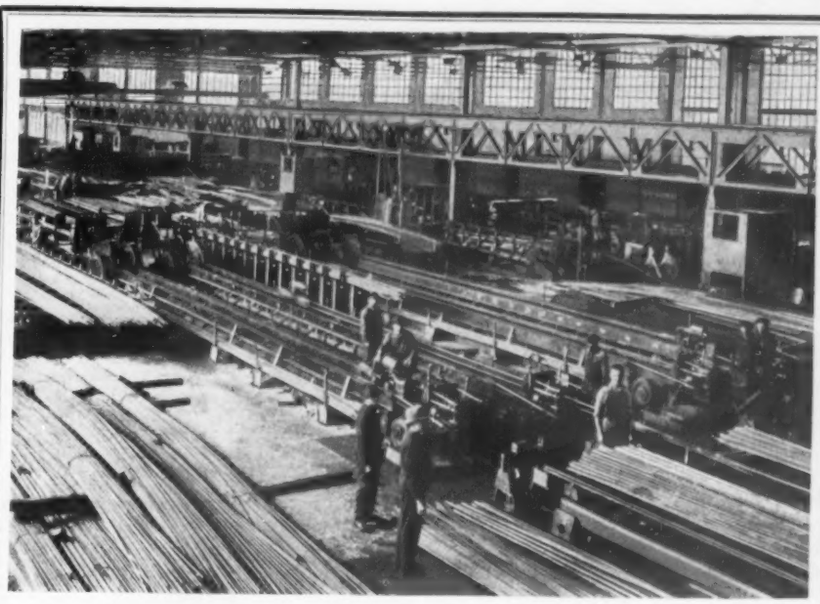
New York—Pronounced improvement in demand for steel out of warehouse is noted by most jobbers. Orders are more numerous, demand broader and total tonnage heavier.

Philadelphia—Jobbers have advanced galvanized sheets and galvanized roofing $2 a ton to 3.60c. Sentiment is better and buying has expanded slowly.

Detroit—Demand for iron and steel is maintaining a small but steady increase over the low period of the bank moratorium. Sentiment continues much improved, with the general belief that the turn has come. Prices are unchanged.

Cincinnati — Demand for steel from warehouses has tapered so that total tonnage for April may show only slight improvement over March. Business is well diversified. Prices are unchanged.

St. Louis—With seasonal requirements improving, iron and steel warehouse business is showing more life than at any time this year.



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Structural Shapes

Awards Are Lighter—States Delay Work Until Extent of Federal Aid Is Determined —Majority of Projects Are Small—8000 Tons Figured for New York Apartment

STRUCTURAL SHAPE PRICES, PAGE 45

Pittsburgh— A large number of building and repair jobs, requiring an average of 50 tons each, are being figured. Jones & Laughlin Steel Corp. has closed on three bridges in a recent Pennsylvania state letting, requiring a total of 600 tons. Plain structural material is quoted around 1.60c, Pittsburgh, base.

Cleveland—Public work requiring structural shapes is lacking, the state not knowing what financial aid to expect from the federal government, and consequently deferring its program. More than 10,000 tons of steel for Cleveland and Cuyahoga county bridge work is held up for lack of financing, despite prospects for higher costs. Fabricators are working on small lots for various private projects.

Chicago—Indiana opens bids this week on highway bridges requiring 700 tons, while a railroad subway at Decatur, Ill., will take 200 tons. Awards are light and include 350 tons for World's Fair buildings, 250 tons for a St. Louis brewery, and several small bridge orders.

Boston—Structural steel demand is the lightest of the heavy finished products in New England. Several New England fabricators are refusing to bid on further government work, a number having lost money, or are still seeking payment for steel already fabricated. Plain material continues nominally 1.60c, Pittsburgh.

New York—Structural steel demand continues light, but with a slight gain in small buying for private jobs. New York state is taking bids May 11 on a moderate tonnage for bridges. Close to 8000 tons will be required for apartment buildings in the lower east side, Manhattan, which may go ahead sooner than expected. Plain material is unchanged at 1.60c, Pittsburgh.

Philadelphia—Structural activity continues at low ebb, with an award of 500 tons for a local packing plant outstanding. Standard shapes continue nominally 1.60c, nearest mill, with fabricated prices unsettled.

Contracts Placed

1800 tons, Marine hospital, Staten Island, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.

1250 tons, federal building, Fort Worth, Tex., to Austin Bros., Dallas, Tex.; James I. Barnes, Springfield, O., general contractor.

595 tons, highway bridge, Bradford and Susquehanna counties, Pennsylvania, to Jones & Laughlin Steel Corp., Pittsburgh.

500 tons, packing plant, J. J. Felin, Philadelphia, to McClintic-Marshall Corp., Bethlehem, Pa.

330 tons, theater, Brighton Beach avenue, Brooklyn, N. Y., to National Bridge Works, Long Island City, N. Y.

270 tons, addition to Marcus Ward Home, Maplewood, N. J., to Belmont Iron Works, Philadelphia; through C. T. Wills Inc.

250 tons, Falstaff Brewing Corp., St. Louis; 125 tons each to Atlas Iron Works, and Superior Structural Steel Co., St. Louis.

225 tons, refinery, Midvale, Utah, to Minneapolis-Moline Power Implement Co., Minneapolis.

200 tons, Press building, World's fair, Chicago, to Worden-Allen Co., Chicago.

150 tons, Battle of Gettysburg auditorium, World's fair, Chicago, to Gage Structural Steel Co., Chicago.

150 tons, highway bridges, Jasper county, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines.

145 tons, building, Kieckhfer Container Co., Delar, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.

240 tons, three bridges, near Greenwood Springs, Miss., to Virginia Bridge & Iron Co., Roanoke, Va.; Globe Construction Co. Inc., New Orleans, general contractor.

175 tons, garage, Rice Bakery, Baltimore, to Dietrich Bros., Baltimore.

175 tons, beams for cofferdam, New Orleans, to American Bridge Co., Pittsburgh.

120 tons, bridge repairs, Jones Falls, Baltimore, to Acme Steel Co., Baltimore; Pecora & Gaskill, general contractors.

115 tons, bridge span, Arcadia, Calif., to American Bridge Co., Pittsburgh.

110 tons, bridge, South Dakota, to Minneapolis-Moline Power Implement Co., Minneapolis.

105 tons, alterations, boiler house, Delaware, Lackawanna & Western railroad, Jersey City, N. J., to American Bridge Co., Pittsburgh.

100 tons, angles, channels and bars, department of plants and structures, New York, to Egleston Bros & Co. Inc., Long Island City, N. Y.

100 tons, or more, bridges, Gadsden and Glades counties, Florida, to Virginia Bridge & Iron Co., Roanoke, Va.; A. R. Merrill, Tampa, awarded reinforcing bars.

100 tons, postoffice, Hattiesburg, Miss., to Bristol Steel & Iron Co., Bristol, Va.

100 tons, substation, New York Power & Light Corp., Schenectady, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.

100 tons, bridge, Chestnut Hill, Mass., to Lackawanna Steel Construction Corp., Buffalo.

Unstated tonnage, small bridge projects, Missouri Pacific railroad, to American Bridge Co., Pittsburgh.

Shape Awards Compared

	Tons
Week ended April 29	7,405
Week ended April 22	14,483
Week ended April 15	5,215
This week in 1932	15,335
Average weekly, 1932	14,285
Average weekly, 1933	10,031
Average weekly, March	12,610
Total to date, 1932	252,625
Total to date, 1933	180,559

Contracts Pending

8000 tons, apartments, lower east side, Manhattan (New York), approved by Reconstruction Finance Corp.; Fred F. French Co., New York, builders.

2050 tons, state highway bridges, Mississippi; bids May 2.

1500 to 1800 tons, Bohemian club building, San Francisco; Dinwiddie Construction Co., San Francisco, low.

700 tons, highway bridges, Indiana; bids May 2.

550 tons, cell structures for county jail, San Francisco; Judson-Pacific Co., San Francisco, low.

400 tons, steel piling, North Beach, Calvert county, Maryland; bids May 9.

380 tons, monastery building, Villanova college, Villanova, Pa.

300 tons, sheet piling and shapes, navy, air base, Coco Solo, Canal Zone; Inland Steel Co., Chicago, and Jones & Laughlin Steel Corp., Pittsburgh, low.

300 tons, printing plant, Wilson-Jones Mfg. Co., Elizabeth, N. J.; bids in; Leo Caproni, New Haven, Conn., engineer.

200 tons, Wabash railroad subway, Decatur, Ill.

200 tons, building, W. M. Evans Dairy Co., Brooklyn, N. Y.

125 tons, residence, Durham N. C. for St. Pierre Du Bois.

Car Needs Stationary

Shippers regional advisory boards estimate that freight carloadings in the second quarter of this year will only be 3/10 of 1 per cent less than actual loadings in the second quarter of 1932. The estimate for this quarter is 3,606,491 carloads. An increase of 15 per cent is forecast for coal and coke; a decrease of 25 per cent for automobiles, trucks and parts and 18 per cent for agricultural implements.

Pittsburgh Screw Re-elects

All directors and officers of the Pittsburgh Screw & Bolt Co., Pittsburgh, were re-elected at the company's annual meeting, April 12.

Concrete Bars

Efforts Made at Pittsburgh to Strengthen Prices, on Uniform Basis, but Markets Are Untested—2800 Tons Are Awarded for Anchorage for Golden Gate Bridge

REINFORCING BAR PRICES, PAGE 45

Pittsburgh—A price of 1.55c now is quoted for cut lengths of new billet steel bars to the ultimate consumer, on a uniform basis, Pittsburgh, Chicago, Cleveland, Buffalo and Birmingham, Ala. The distributors' price as usual carries the $3 a ton differential, and remains 1.40c. Even lots of several hundred tons are going at the full price.

Cleveland — Concrete bar producers have been endeavoring to advance prices, but 1.30c to 1.40c, base, Cleveland mill, for new billet steel, still is being quoted to distributors. This is a nominal price, as nothing has appeared recently to test the market. Bars for a county sewer project, 130 tons, figured several weeks ago, finally have been placed. No state work is in immediate prospect.

For the Columbus, O., postoffice, 425 tons of rail steel reinforcing has been awarded.

Chicago—Reinforcing bar inquiries and wards continue few. Shipments against some old orders for Illinois road work have been held up, a result of price differences between the state and cement producers. Bars for Indiana road work are to be placed shortly. Prices tend toward firmness but are provided little test.

Boston—Demand is light, with a lack of building and engineering projects. Rail steel bars are steady at 1.30c, nearby Boston mill, and billet steel bars are untested at 1.40c, Buffalo.

New York—Lack of new building projects and curtailed highway and bridge construction limits demand for all types of concrete reinforcing steel. Kalman Steel Corp. has booked 120,500 square yards of mesh for highways at Jones beach, Long Island.

Philadelphia—No orders for more than 50 tons are noted, and even small orders are scarce. Much road work in Pennsylvania and New Jersey is awaiting action of state legislatures in drawing up employment programs.

Contracts Placed

2800 tons, contract No. 3, anchorage, Golden Gate bridge, San Francisco, to Pacific Coast Steel Corp., San Francisco.

425 tons, postoffice, Columbus, O., to unstated interest.

400 tons, reconstruction, Wantagh parkway, including parking field, Jones beach, Belmont Lake state park, Long Island, N. Y., to Kalman Steel Corp., Bethlehem, Pa.; Johnson, Drake & Piper Co., Freeport N. Y., general contractor.

130 tons, sewer, Berea, Cuyahoga county, O., to Patterson-Leitch Co., Cleveland; through Freeman & Jones Inc., Cleveland, general contractors.

119 tons, state highway work in Kern county, California, to unnamed interest.

100 tons, mausoleum, Inglewood, Calif., to unnamed interest.

Contracts Pending

500 tons, mesh bars, state highway bridges, New York; bids May 11.

500 tons, state highways and bridges, Mississippi; bids May 2.

500 tons, Pine canyon dam, Pasadena, Calif.; Blue Diamond Co., Los Angeles, low.

300 tons, Panama; bids May 2.

260 tons, outlet tunnels, San Gabriel dam No. 1, Los Angeles county, California; bids May 1.

200 tons, Bohemian club building, San Francisco; Dinwiddie Construction Co., San Francisco, low.

Personals

(*Concluded from Page* 24)

F. J. Heaslip, of Fairbanks, Morse & Co., Chicago, is secretary.

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George L. Abbott, president, and all other officers and directors of the Garlock Packing Co., Palmyra, N. Y., were re-elected at the annual meeting of stockholders on April 5.

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George A. Blackmore, vice president and general manager, Westinghouse Air Brake Co., Wilmerding, Pa., has been elected a director of the Duff-Norton Mfg. Co., Pittsburgh, to succeed A. L. Humphrey, resigned. Other directors re-elected were Thomas A. McGinley, president, E. J. Griffiths and F. O. Graham.

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R. W. Mackenson, Pittsburgh Coal Co., Pittsburgh, has been elected president of the Purchasing Agents Association of Pittsburgh for the coming year.

I. E. Walton, Heppenstall Co., Pittsburgh, has been named vice president; A. D. Feeman, purchasing agent, Superior Steel Corp., Pittsburgh, secretary; R. C. Buerkle, National Bearing Metal Co., Pittsburgh, treasurer.

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C. A. Terry, honorary vice president, has been elected a director of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for a four-year term.

Warren H. Jones, secretary of the company, has been elected a director to complete the term of E. M. Herr, deceased. All other directors were re-elected.

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F. E. Wolf, formerly manager, Pittsburgh office, and Harold Holden, formerly manager, Boston office, of the Pangborn Corp., Hagerstown, Md., no longer are connected with that company, and the two sales offices have been closed.

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Charles Piez, chairman of the board of the Link-Belt Co., Chicago, since 1906, has retired from active business. He is 68, and in ill health. Mr. Piez was one of the founders of the Illinois Manufacturers' association.

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William L. McGrath, vice president, has been elected president of the Eclipse Machine Co., Elmira, N. Y., succeeding John C. Ferguson, who resigned April 30.

Malcolm P. Ferguson has been elected vice president and director of the company.

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Concrete Awards Compared

	Tons
Week ended April 29	**3,974**
Week ended April 22	**2,245**
Week ended April 15	**751**
This week, 1932	**2,408**
Average weekly, 1932	**3,920**
Average weekly, 1933	**3,188**
Average weekly, March	**3,425**
Total to date, 1932	**82,500**
Total to date, 1933	**57,383**

7988 at Sheet Metal Plants

Sheet metal production industry in Canada in 1931 employed 7988 persons in 157 plants whose output was valued at $39,039,005, compared with $47,057,479 in 1930. Salaries and wages paid in 1931 totaled $9,265,806. Raw materials cost $20,230,852.

United States Pipe & Foundry Co., Burlington, N. J., reports net loss of $1,273,054 in 1932, after all charges, compared with net profit of $1,012,215 in 1931.

Pipe

Mechanical Tubing in Better Demand—Prices Being Taken on Some Line Projects—Cast Quiet

PIPE PRICES, PAGE 45

Pittsburgh—Jones & Laughlin Steel Corp., Pittsburgh, has formally announced its new capacity to produce hot-rolled seamless boiler tubes, 2 to 4½ inches diameter. Sizes up to and including 6-inch may also be produced. The tubular products trade is sharing only to a minor extent in improved buying. Building operations continue slow. Several fair-size line pipe inquiries are noted, but closing is indefinite. Contraction is apparent in shipments and specification for oil country goods. Demand for mechanical tubing has been improving.

Boston—Inquiry for larger lots of cast pipe has declined, but a fair volume of small orders are active. Boston has purchased about 750 tons of iron castings. Steel pipe buying is light.

New York—Eastern cast pipe foundries are more active on recent orders. New inquiry is light, but includes 650 tons for state hospital projects. While $30, eastern foundry, frequently is shaded, average business is close to that figure. Practically all cast pipe now is being trucked for New York district delivery.

Birmingham, Ala. — Cast pipe plant operations here continue at a low rate. Several contracts are expected to be placed shortly.

Cast Pipe Placed

750 tons, castings, mainly class A at 1.95c a pound, sewer department, Boston, to Mechanics Iron Foundry Co., Boston.

Steel Pipe Placed

400 tons, heating plant, Gowanda state hospital, Helmuth, N. Y., to Republic Steel Corp., Youngstown, O.; through Freyn Bros., Detroit.

Cast Pipe Pending

500 tons, smal sizes, centrifugal, class 100 and 150, Owenton, Ky.; bids May 12, f.o.b. Sparta, Ky. Elevated tank and tower bids same date.

450 tons, pipe and fittings, water system, Harlem Valley state hospital, Wingdale, N. Y.; bids May 10.

200 tons, up to 30-inch, state buildings, Oneonta, N. Y.; bids May 18. Project also requires 3000 feet, 2 to 6-inch steel pipe for gas line.

Steel Pipe Pending

226 tons, ¾-inch black, Hoover dam, Boulder City, Nev.; specification A-3194-A; bids April 28.

162 tons, 1-inch O. D. tubing 14 gage, Hoover dam, Boulder City, Nev.; specification A-3190-B; bids April 28.

Unstated tonnage, 1130 feet, 12-inch welded steel pipe for navy; bids May 2.

Here and There In Industry

PEDEN IRON & STEEL CO., Houston, Tex., has been reorganized with indebtedness reduced from $1,500,000 to $450,000. Stock paid for the Wilson Hardware Co., Beaumont, Tex., in 1929 has been bought back at a price advantageous to both companies. The name of the company in 1929 was changed to Peden Co. but now has been returned to the former title, as above. The firm was established in 1890 and handles mill supplies, machine tools, marine supplies, heavy hardware, reinforcing steel, contractors' supplies and similar lines. E. A. Peden is chairman of the board, D. D. Peden president and treasurer, J. B. Robinett secretary, John A. Harvin, B. E. Taylor and Fred M. Golding vice presidents.

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Weld & Liddell, consulting engineers, New York, have removed their offices to 76 Beaver street.

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Myers Engineering Equipment Co., Mart building, St. Louis, has been organized by George Myers to specialize in heating and ventilating, drying and humidifying, air conditioning and cooling and refrigeration. Mr. Myers was associated for 12 years with the Carrier Corp. A branch office has been established at Eldorado, Ill., in charge of John C. Porter.

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Sterling-French Machinery Co., New Center building, Detroit, has been appointed representative of the Sundstrand Machine Tool Co., Rockford, Ill., in Detroit and the province of Ontario. D. B. Burleigh, formerly vice president of the Sundstrand company, will be in charge of this line for the Detroit company.

□ □ □

Weldmech Steel Products Co., Hattiesburg, Miss., W. S. Tatum president, is on full-time operation producing beer truck bodies for distribution in Illinois, Indiana, Missouri and Louisiana.

□ □ □

Rose-Engel Co., formerly of Calexico, Calif., has leased a plant at 715 Sanford avenue, Wilmington, Calif., for the manufacture of bonding and building materials required under the new building code to secure walls against earthquake hazards. The company will also manufacture a compressing machine and line of

(*Please turn to Page* 61)

Amalgamated Association Would Renew Present Scale

Reaffirmation of the 1932-33 wage scales in sheet, strip and bar iron mills resulted from the 58th annual convention of the Amalgamated Association of Iron, Steel and Tin Workers at Pittsburgh last week.

The present contracts expire June 30, and before that date it will be up to the employers' associations to indicate their attitude as regards to renewal.

Wages in bar iron mills having contracts with the Amalgamated association will be unchanged in May and June, puddlers to receive $9.30 per ton. The average sales price of bar iron in the past two months was 1.50c per pound. Following are further price comparisons:

	1933	1932	1931
Jan.-Feb.	1.50c	1.65c	1.70c
March-April	1.50c	1.65c	1.70c
May-June		1.50c	1.70c
July-Aug.		1.45c	1.70c
Sept.-Oct.		1.50c	1.65c
Nov.-Dec.		1.45c	1.65c
Yearly average		1.53c	1.66c

Canada Lags in March

March production of steel ingots and direct steel castings in Canada was 11,212 tons, compared with 12,374 tons in February and 45,572 tons in March, 1932. The first quarter total was 64,352 tons, against 97,101 tons a year ago.

No pig iron was produced in Canada in March.

March output of ferroalloys was 927 tons, contrasted with 1075 tons in February.

Pig Iron

Basic Up at Pittsburgh, Southern Rise $2 in East—Buffalo Stacks May Go In

PIG IRON PRICES, PAGE 46

Pittsburgh — An advance of 50 cents a ton to $14.50, Neville Island, has been taken as the new base price on basic iron. Although not prompted by any marked increase in inquiries, this is a further step in a stronger market situation and follows foundry, malleable and bessemer. A Monaca, Pa., buyer has divided about 500 tons of No. 1 foundry iron among two furnaces at a full $14.50, Valley, base. The inquiry for 1000 to 3000 tons of basic iron which an Oakmont, Pa., buyer asked prices on three or four weeks ago has been revived and may be closed shortly. Inquiry also is out here for an unstated tonnage of bessemer, which may amount to 10,000 tons and which represents the buyer's requirements for a period dating from early June.

Cleveland—Sales increased substantially to 8000 tons during the week, though few individual orders exceeded 500 tons. Better demand is noted for steelworks grades. Some companies here are booking orders at current prices, with the understanding that at least part of the tonnage will not be specified until the third quarter, though refusing to go beyond that period. Corrigan, McKinney Steel Co., which recently lighted a second blast furnace, now is getting a third ready for production shortly. Vessel movements disclose that shipments of pig iron from this port to Saginaw, Mich., for General Motors are getting under way. Prices are firm but unchanged, except that Jackson county makers of silveries have advance their quotations $1 a ton for delivery in this district, 8 per cent now being $19, furnace.

Chicago—Improvement in pig iron shipments has accelerated recently and the April movement far exceeded earlier expectations. Improvement over March shipments is expected to be around 100 per cent. Prospects of a price advance are regarded as favorable, some announcement being looked for within the next few days. While automotive demand still is outstanding, improvement in consumption has spread among smaller consumers and practically all lines are more active. Speculative buying has been more pronounced in pig iron than in finished steel products, although producers have discouraged contracting involving tonnages beyond ordinary requirements and farther ahead than third quarter. The market is firm at $15.50, furnace, for No. 2 foundry and malleable.

Boston—Recent markups on both Buffalo and eastern Pennsylvania iron are being held. The New England foundry has reported the 25 cent silicon differentials on foundry grades, with a 50 cent rise on all grades of malleable over corresponding foundry silicons, or $16.25, furnace, for malleable for all silicons up to 2.25. Opinion prevails that inflation will result in Dutch and India prices being forced into line.

Philadelphia — Although spotty, pig iron buying has improved, with

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Muddy boots and Paris pumps, high heels and hobnails—a ceaseless parade pounds and shuffles and scuffs along for eighteen years before the Rolled Steel floors in the vestibules of New York City's subway cars give up the battle and are ready for replacement.

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prices strong. Some believe that continued strengthening in Dutch iron, as might readily develop should foreign exchange go higher, would soon be reflected in a further increase in eastern Pennsylvania iron, which at even the new $13.50 furnace base price is being sold at least 50 cents a ton under cost of production. Southern iron has been advanced $2, to $17 to $17.25, local docks, instead of $1, as reported.

Buffalo—Operators of two, possibly three, blast furnaces are giving serious consideration to resumption in their respective works, long idle. One or two merchant furnaces and a steelworks stack may go into production by the end of May if demand holds up to recent averages. The single stack in blast is producing twice as much iron as in first quarter. Eastern prices are said to be firmer. The largest inquiry this year is pending.

Cincinnati—Pig iron interests note a modest gain in shipments, and are confident this is due to a heavier melt. Sales of iron, excepting 500 tons of northern iron, were restricted to 100-ton lots or less. Inquiries on prices for fourth quarter shipments are meeting rebuffs; an important northern interest quotes to Oct. 1.

New York—An advance in the price of Buffalo iron delivered here is expected shortly. Most of the leading consumers now are covered into the third quarter, and some for the remainder of the year. Recent orders are more diversified. The A. P. Smith Mfg. Co., East Orange, N. J., is inquiring for 300 tons of No. 2X and No. 2 plain for fourth quarter.

St. Louis—Demand for pig iron is the most active and diversified in months. Not only is the melt increasing, but the belief in coming inflation is an added incentive to buying. Generally, users experience less difficulty in arranging credit, and interest rates are lower. Most recent expansion is in gray iron foundries.

Birmingham, Ala. — Recent increase of $1 per ton in southern iron, and $2 for eastern points, has not interrupted small lot purchasing.

Toronto, Ont.—Merchant pig iron sales for the week held slightly above the average for the year, at 400 tons. Melters are buying in single carlots for spot delivery.

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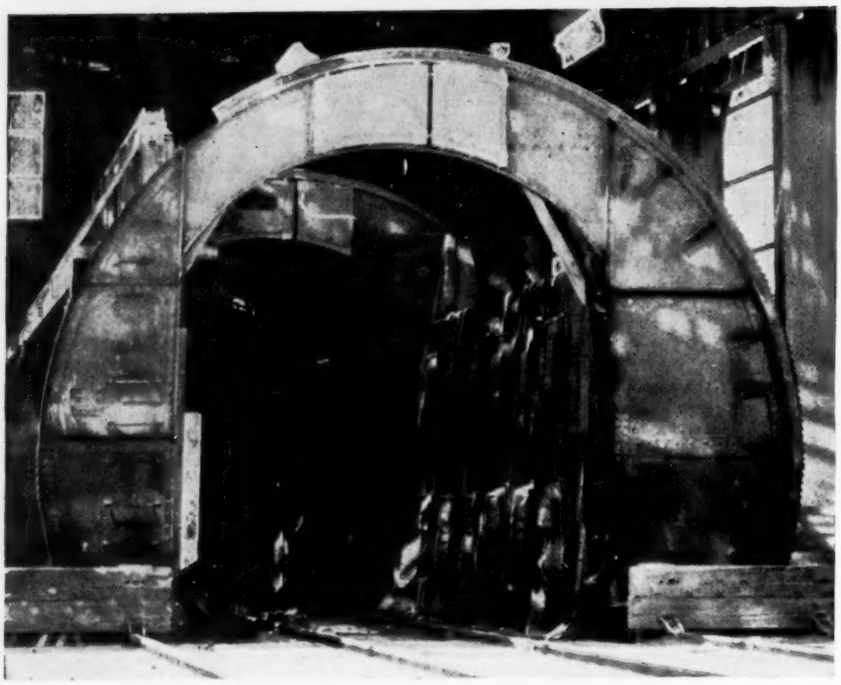

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Lake Superior Iron Ore Vessel Shipments Under Way

Iron Ore Prices, Page 46

Cleveland—Vessel shipments of Lake Superior iron ore have started from upper lake ports, but the tonnage for April may not be as large as that in the month last year, 44,073 tons. In April, 1931, the movement amounted to 175,921 tons. Prices for the season have not been determined. On the eve of what appears to be a general rise in commodity prices, producers feel it would be ill-advised for them to name prices now, after carrying heavy stocks for years under an enormous load of taxes. The Cleveland-Cliffs Iron Co. has announced leasing for 50 years its Morris-Lloyd mine on the Marquette range to the Inland Steel Co. Inland, as previously noted, has given up its leases on Cuyuna range mines, and in recent years has been developing ore property in Michigan.

New York—Foreign iron ore prices continue nominally unchanged. While it is believed buying would result in stronger quotations, in view of the higher relative value of sterling, there has been little to test the market.

Scrap

Rise in Quotations Continues —Dealers Slow to Sell at Current Levels—Supply Light

Pittsburgh—Owing to reluctance of dealers to sell at less than $10.75 and tonnage lots at less than $11 in this district, No. 1 heavy melting steel again has advanced 25 cents a ton and is quoted $10.50 to $11. A small sale of No. 1 steel was made early last week at $10.25 and while important buyers are not able to close on tonnage orders at the prices they are willing to pay, around $10.50, their general absence from the market can not much longer persist.

Chicago—Heavy melting steel has advanced 25 cents, to $7.50 to $8, with prospects pointing to additional gains upon the appearance of new buying. Some dealers have been paying $8 for this grade delivered at docks and it is regarded unlikely

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL	
Birmingham	6.50 to 7.00
Boston, dealers	3.50 to 3.75
Buffalo, No. 1	8.00 to 8.50
Buffalo, No. 2	7.00 to 7.50
Chicago	7.50 to 8.00
Cleve., No. 1	7.50 to 8.00
Cleve., No. 2	6.50 to 7.00
Det., No. 1 deal.	6.00 to 6.50
Det., No. 2 deal.	5.50 to 6.00
E. Pa. del. mill	8.00
E. Pa., No. 2 del.	5.50 to 6.00
Federal, Ill.	6.00 to 6.50
Granite City, Ill.	5.50 to 6.00
N. Y., deal. R. R.	5.50
N. Y. deal. No. 2	4.00
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	10.50 to 11.00
Pitts. No. 1 R. R.	11.00 to 11.50
St. L. No. 1 sel.	6.00 to 6.50
Valleys, No. 1	9.00 to 9.50
COMPRESSED SHEETS	
Buffalo, dealers	7.00 to 7.50
Chi. (Factory)	6.00 to 6.50
Cleveland	7.00 to 7.50
Detroit, dealers	6.00 to 6.50
E. Pa. new mat.	6.00 to 6.50
Pittsburgh	10.25 to 10.75
Valleys	8.50 to 9.00
BUNDLED SHEETS	
Buffalo	4.00 to 4.50
Cincinnati, del.	4.25 to 4.75
Cleveland	5.00 to 5.50
Eastern, Pa.	5.50
Pittsburgh	9.25 to 9.75
St. Louis	2.00 to 2.50
SHEET CLIPPINGS LOOSE	
Chicago	2.50 to 3.00
Cincinnati	2.50 to 3.00
Detroit, dealers	2.50 to 3.00
St. Louis	1.50 to 2.00
STEEL RAILS SHORT	
Birmingham	8.50 to 9.00
Boston, dealers	3.50 to 3.75
Buffalo	10.00 to 10.50
Chicago (3 ft.)	9.00 to 9.50
Chicago (2 ft.)	9.50 to 10.00
Cincinnati, del.	9.25 to 9.75
Detroit, deal.	9.50 to 10.00
Pitts. (open-hearth, 3 ft. and less)	11.00 to 11.50
St. Louis	7.00 to 7.50
STOVE PLATE	
Birmingham	5.50 to 6.00
Boston, dealers	2.00 to 2.50
Buffalo	8.00 to 8.50
Chicago, net	6.50 to 7.00
Cinci., deal. net	3.50 to 4.00
Det., net deal.	3.50 to 4.00
Eastern Pa.	6.00 to 6.25
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00
COUPLERS, SPRINGS	
Buffalo	10.00 to 10.50
Chicago	8.50 to 9.00
Eastern Pa.	9.00
Pittsburgh	11.00 to 11.50
St. Louis	6.00 to 6.50
ANGLE BARS—STEEL	
Chicago	8.00 to 8.50
St. Louis	5.75 to 6.25
LOW PHOSPHORUS	
Buffalo, billets and bloom crops	8.50 to 9.00
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	10.00 to 10.50
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	13.00 to 13.50
FROGS, SWITCHES	
Chicago	7.00 to 7.50
St. Louis	5.50 to 6.00
SHOVELING STEEL	
Chicago	7.50 to 8.00
Cleveland	5.75 to 6.00
St. Louis	5.00 to 6.00
RAILROAD WROUGHT	
Birmingham	6.50 to 7.00
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	5.00 to 5.50
Buffalo, No. 2	8.00 to 8.50
Chi., No. 1, net	6.00 to 6.50
Chicago, No. 2	7.50 to 8.00
Cinci., No. 2	6.00 to 6.50
Eastern Pa.	8.00 to 8.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts. No. 1	10.50 to 11.00
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	5.00 to 5.50
SPECIFICATION PIPE	
Boston	3.00 to 4.00
Eastern Pa.	6.00 to 7.00
N. Y., deal	2.00 to 2.25
BUSHELING	
Buffalo, No. 1	7.00 to 7.50
Chicago, No. 1	5.00 to 5.50
Cinci., No. 1 deal.	4.50 to 5.00
Cinci., No. 2	2.75 to 3.00
Cleve., No. 2	4.75 to 5.25
Det., No. 1 new deal.	5.00 to 5.50
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.50 to 9.00
MACHINE TURNINGS	
Birmingham	2.50 to 3.00
Boston, dealers	1.00 to 1.25
Buffalo	4.00 to 4.50
Chicago	3.50 to 4.00
Cinci., deal	3.50 to 4.00
Cleveland	4.25 to 4.75
Detroit	3.25 to 3.75
Eastern Pa.	3.50 to 4.00
N. Y., deal.	1.35 to 1.50
Pittsburgh	7.25 to 7.75
St. Louis	1.50 to 2.00
Valleys	6.75 to 7.25
BORINGS AND TURNINGS	
For Blast Furnace Use	
Boston, dealers	0.75 to 0.90
Buffalo	4.00 to 4.25
Cinci., deal	3.50 to 4.00
Cleveland	4.75 to 5.25
Detroit, deal	4.50 to 5.00
Eastern Pa.	3.50 to 3.75
N. Y., deal.	1.35 to 1.50
Pittsburgh	5.75 to 6.25
CAST IRON BORINGS	
Birming., chem.	8.50 to 9.50
Birming., plain	2.50 to 3.00
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	4.00 to 4.25
Chicago	4.00 to 4.50
Cinci., deal.	3.50 to 4.00
Cleveland	4.75 to 5.25
Detroit, deal.	4.50 to 5.00
Eastern Pa.	3.50 to 3.75
E. Pa., chem.	8.00 to 10.00
N. Y., deal.	1.00 to 1.50
Pittsburgh	6.25 to 6.75
St. Louis	2.00 to 2.50
PIPE AND FLUES	
Cinci., deal.	3.25 to 3.50
RAILROAD GRATE BARS	
Buffalo	4.00 to 4.50
Chicago, net	6.00 to 6.50
Cincinnati	4.50 to 5.00
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00
FORGE FLASHINGS	
Boston, dealers	2.00 to 2.50
Buffalo	5.50 to 6.00
Cleve. ov. 10 in.	6.00 to 6.50
Detroit	4.50 to 5.00
FORGE SCRAP	
Boston, dealers	1.75 to 2.00
Chicago	8.50 to 9.00
Eastern Pa., del.	5.00 to 5.50
ARCH BARS, TRANSOMS	
Chicago, net	6.00 to 6.50
St. Louis	3.50 to 4.00
AXLE TURNINGS	
Boston, deal.	2.50 to 3.00
Buffalo	6.00 to 6.25
Chi., elec. fce.	4.50 to 5.00
Cleveland	5.50 to 6.00
Eastern Pa., del.	6.50 to 7.50
St. Louis	3.50 to 4.00
STEEL CAR AXLES	
Birmingham	9.00 to 10.00
Boston, ship. pt.	5.50 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	10.00 to 10.50
Eastern Pa.	14.50
St. Louis	8.75 to 9.25
SHAFTING	
Boston, ship. pt.	6.00 to 6.50
Eastern Pa.	11.50 to 12.50
N. Y., deal.	5.50 to 6.00
St. Louis	7.50 to 8.00
CAR WHEELS	
Birming., iron	7.00 to 7.50
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	9.00 to 9.50
Chi., rolled steel	8.00 to 8.50
Cincinnati iron	6.25 to 6.75
E. Pa. iron	9.00
E. Pa. steel	9.00
Pitts., iron	9.00 to 9.50
Pitts., steel	10.50 to 11.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	6.00 to 6.50
NO. 1 CAST SCRAP	
Birmingham	7.50 to 8.00
Boston, No. 2	2.25 to 2.50
Boston, textile	6.00 to 6.25
Buffalo, cupola	9.00 to 9.25
Buffalo (mach.)	9.50 to 10.00
Chicago, agri., net	6.50 to 7.00
Chi., mach. net	8.00 to 8.50
Chi., railroad net	7.00 to 7.50
Cinci., mach. cup	6.50 to 7.00
Cleve. cupola	7.00 to 8.00
Det., net deal.	7.00 to 7.50
E. Pa. cupola	8.50 to 9.50
N. Y., cup. deal.	4.50 to 5.00
N. Y., del. local foundries	7.00 to 7.50
Pitts., cupola	9.00 to 9.50
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L. No. 1	6.00 to 6.50
St. L. No. 1 mach.	6.25 to 6.75
HEAVY CAST	
Boston, del.	3.50 to 4.00
Bost., mach. cast	7.00 to 7.50
Buffalo, break	6.50 to 7.00
Cleve., break	5.50 to 6.00
Detroit, auto net deal.	8.50 to 9.00
Det. break., deal.	5.00 to 5.50
Eastern Pa.	8.50 to 9.00
N. Y. No. 1, deal.	4.50 to 5.00
N. Y. break, deal.	4.00 to 4.50
Pittsburgh	8.00 to 8.50
MALLEABLE	
Boston, consum.	6.75 to 7.25
Buffalo	9.50 to 10.00
Chicago, agri.	6.00 to 6.50
Chicago, R. R.	8.50 to 9.00
Cinci., agri. del.	6.50 to 7.00
Cinci., R. R., del.	7.00 to 7.50
Cleveland, rail	7.50 to 8.00
Det. auto deal.	6.00 to 6.50
St. Louis	4.75 to 5.25
RAILS FOR ROLLING	
5 feet and over	
Birmingham	7.00 to 8.00
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	9.00 to 9.50
Eastern Pa.	9.50
New York dealer	3.75 to 4.25
St. Louis	7.00 to 7.50
LOCOMOTIVE TIRES	
Chicago, cut	8.50 to 9.00
St. L., No. 1	5.00 to 5.50
LOW PHOS. PUNCHINGS	
Buffalo	9.00 to 9.50
Chicago	9.00 to 9.50
Eastern Pa.	9.00
Pittsburgh	12.00 to 12.50

that mills will be able to obtain tonnage at less, while $8.50 is seen as the more probable price. The sharp advance has served to bring out larger tonnages, although available supplies still are only moderate. Shipments have increased with the upturn in iron and steel plant operations. Quotations on other grades have followed the upward movement of heavy melting steel.

Cleveland—Dealers are out of the market and little selling is being done. Prices have not been changed in the past week but have gained strength. A shipload of 1100 tons from a Wisconsin port has reached Cleveland enroute to mills in the Youngstown district.

Boston—Several grades of scrap are firmer, including No. 1 steel, for which Worcester is paying $5.75, delivered, an advance of 25 to 50 cents. New York, New Haven & Hartford railroad has sold a tonnage direct to American Steel & Wire Co. Buying against a 6000-ton No. 1 export order continues.

New York—No. 1 and 2 steel scrap for export have advanced 50 cents a ton following recent strength at Pittsburgh. Considerable scrap remains to be loaded against export orders, but new buying for boat shipment has slowed.

Philadelphia—Scrap prices have made further gains, with No. 1 heavy melting steel now holding at $8, delivered, an increase of $1. This new figure, the second recent advance, was established by the further placing of several thousand tons by the Claymont, Del., consumer, who a week or so previously covered on a round tonnage at $7, delivered. No. 2 melting steel now is $5.50 to $6, and heavy breakable cast $8.50 to $9. The latter grade, with melting steel, is becoming exceedingly scarce in this district. Bethlehem Steel Co. has closed on 5000 tons of old rails in Lancaster county, Pennsylvania, most of which will be rerolled.

Buffalo—Dealers continue to mark up scrap prices and claim to be indifferent toward offers at prices available a week ago. Some scrap is reported to be moving out of the district. There have been no new purchases of No. 2 heavy melting steel, sold recently at $7.

Detroit—Iron and steel scrap has become a day-to-day market, so intense is the interest and so insistent the demand from consumers, including outside districts. Every price has been advanced 25 cents to $1. Not only are mills anxious for current material for melting but they also seek to build up stocks. Production of scrap is increasing as automobile plant schedules expand, but not proportionate to rising demand. No. 1 steel and compressed sheets are now $6 to $6.50.

Cincinnati—A general increase in quotations on iron and steel scrap is effective. A mill in this district bought 9000 tons of rails offered on a special list of the Louisville & Nashville railroad at an unannounced price, but believed to represent a decided advance.

St. Louis—Demand for steel and iron scrap continues active, and prices are strong. The largest single sale reported was of 3000 tons of heavy melting steel and miscellaneous rails to a district mill for delivery through the next two or three months.

Birmingham, Ala.—Heavy melting steel price has been advanced 50 cents per ton. Plenty of old material is held on dealers' yards with only small tonnages at melters' plants. Prices otherwise are generally unchanged.

Toronto, Ont.—While slight improvement developed in special scrap grades during the week, the market continues dull for most grades. Steel scrap is at a standstill in domestic consumption, but it is understood Montreal dealers will soon start shipments to Britain. Dealers are out of the market and prices are unchanged.

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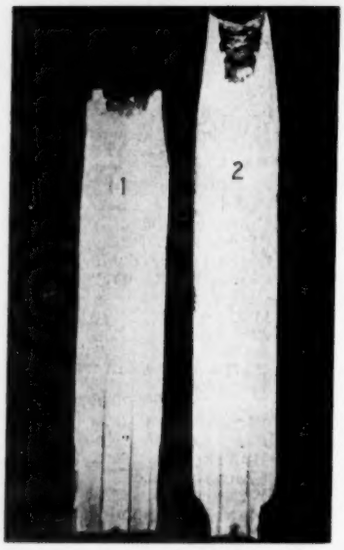

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Coke

Heavier Metallurgical Demand Chicago, St. Louis Note

Coke Prices, Page 46

Metallurgical coke continues to move slowly and foundries are purchasing only immediate requirements in the Pittsburgh district. Chicago, however, reports a rapid increase in demand for foundry grade, coincident with improvement in foundry operation. At St. Louis a further moderate gain in metallurgical coke also is reported. Prices generally are unchanged. By-product is $7, ovens, at Chicago, for outside delivery and $7.75, delivered Chicago. Connellsville coke is $2.25 for common brands of beehive foundry, $4 for premium foundry and $1.75 for beehive furnace.

Equipment

Rise in Operations Spurs Buying in Some Sections

Pittsburgh—United Engineering & Foundry Co. here has experienced recent improvement in orders for rolls, small equipment and miscellaneous repair parts, especially noted since the upturn in steel operations. At the same time, there are indications in the equipment market according to some interests that considerable of the large steel mill equipment projects will be revived. Many of these have been contemplated for more than two years. Roll producers in general are sharing in a spurt in buying. There is better demand for ingot molds although rush shipments are invariably asked. Refractory brick buying is showing a distinct upward trend.

Chicago—Purchases of equipment and machinery are slow to increase. Sellers are encouraged by the trend in general industrial operations, however, feeling that better sales will follow increased activity on the part of their customers. Inquiries are improving more rapidly than orders, but small lots predominate. Railroads give little promise of being active in equipment markets in the near future, and orders recently have been light. While sales of small tools have yet to reflect gains in plant operations the volume has been better maintained than in the markets for heavier equipment. Considerable shopping around is in evidence in purchasing of machine tools.

New York—Inquiry for machinery and plant equipment is light. While in spots industrial plants are operating on heavier schedules, such gains have failed to stimulate interest in new equipment. The navy department continues to furnish most activity in the East, Swind Machinery Co. being low on a diamond boring machine, and the Bryant Machinery & Engineering Co., Chicago on a boring, drilling and milling machine for this interest.

Worcester, Mass.—Waterbury Tool Co., Waterbury, Conn., is low bidder on 40 wire rope hoist units and spares for navy yards. Buying and inquiry for machinery and equipment in New England continues light with activity averaging between 10 and 20 per cent. Little finished equipment is being carried in stock by machinery builders.

Cleveland—Gradual improvement in machine tool and equipment business has been evident over the past two weeks, with an encouraging, though small, volume of orders building up. Dealers are hopeful that the present upswing is not merely another temporary spurt, and that it will continue throughout the summer. A bottling machinery builder bought several used turret lathes last week. Bids close May 3 on 126 chain hoists, 1-5 ton capacity, for Wright Field, Dayton, O.; also two power squaring shears and a slip roll former. Figures went in today on a bench milling machine for the same shops.

Ferromanganese Spot Price Advanced $7 a Ton

Ferroalloy Prices, Page 46

Domestic producers of ferromanganese have re-established spot prices on the $68, eastern seaboard, contract basis. Several weeks ago the spot price was reduced to $61 to meet foreign competition, the contract price continuing $68. Recent developments in the foreign exchange and better demand, however, strengthened prices. Domestic spiegeleisen, 19 to 21 per cent, is moving more actively, with the spot price unchanged at $24, furnace. A report that a merchant furnace in the Pittsburgh district was preparing to manufacture ferromanganese for the first time appears to be unfounded.

Semifinished Steel in Better Demand; Prices Firmer

Semifinished Prices, Page 46

More semifinished steel, mainly sheet bars and billets, is being consumed and a strengthening effect is noted. The price of sheets, bars, billets and slabs is firmer at $26, Pittsburgh, Youngstown, O., and Cleveland. Forging billets are $31 base, Pittsburgh. Wire rods, at $35, are in better demand. Several fair-size tonnages of wire rods have moved to automotive buyers recently.

Imported Fluorspar Up

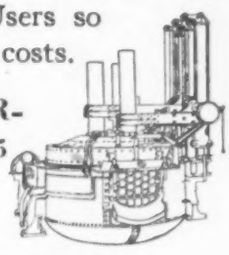
Fluorspar Prices, Page 46

New York—Imported fluorspar has been advanced $1 a ton to $17.50 per gross ton, duty paid.

Lectromelt

direct arc melting and refining furnaces for tool and alloy steel ingot production, for steel castings manufacture, ... and the making of plain steels as are used in the Lectromelt billet size ingot process for reinforcing bars . . . . have now been made even more rapid and economic by the new patent . . .

LIFT and SWING-ROOF, QUICK-TOP-CHARGE DESIGN . . . . This construction may be seen in use in the field . . . . Users so fitted have proved this feature lowers costs.



PITTSBURGH LECTROMELT FURNACE CORPORATION . . PO Box 1125
Pittsburgh, Pa., U. S. A.

and associate company

CANADIAN LECTROMELT FURNACES LTD. . . . . . **4295 Richelieu St., Montreal, P. Q., Canada**

SIZES - - - 50 Pounds to 50 Tons Capacity

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

SHEETS	
Yellow brass (high)	11.75
Copper, hot rolled	13.87½
Lead sheets, cut, to jobbers	7.25
Zinc sheets (100-lb. base)..	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	13.50
Seamless copper	12.62½
RODS	
Yellow brass (high, full turning)	9.25
Naval brass	10.37½
ANODES	
Copper untrimmed	11.25
WIRE	
Yellow brass (high)	11.75

Old Metals

Dealers' buying prices, cents lb.

NO. 1 COMPOSITION RED BRASS	
New York	3.25 to 3.50
Chicago	3.00 to 3.25
Cleveland	3.00 to 3.50
St. Louis	2.50
HEAVY YELLOW BRASS	
New York	2.50 to 2.62½
HEAVY COPPER AND WIRE	
New York	4.50 to 4.75
Chicago, No. 1	3.75 to 4.00
Cleveland	3.25 to 3.75
St. Louis	3.00
COMPOSITION BRASS BORINGS	
New York	2.75 to 3.00
YELLOW BRASS TUBING	
Cleveland	2.25 to 2.75
LIGHT COPPER	
New York	3.50 to 3.75
Chicago	2.75 to 3.00
Cleveland	3.00 to 3.25
St. Louis	2.50
LIGHT BRASS	
Chicago	1.50 to 1.75
Cleveland	1.75 to 2.00
St. Louis	1.50
LEAD	
New York	2.37½ to 2.50
Cleveland	2.00 to 2.50
Chicago	2.00 to 2.25
St. Louis	2.00 to 2.25
ZINC	
New York	1.50 to 1.62½
Cleveland	1.25 to 1.50
Chicago	1.37½ to1.62½
St. Louis	1.25 to 1.50
ALUMINUM	
Clippings, new, soft, Cleve.	9.75 to 10.75
Clippings, hard, Cleveland	6.25 to 7.25
Borings, Cleveland	2.75 to 3.75
Mixed cast, Cleveland	4.50 to 5.50
Mixed cast, St. Louis	4.25 to 4.50

Secondary Metals

Brass ingot, 85-5-5-5	6.50
Remelt aluminum No. 12..	9.00 to 10.00

Metals

Electrolytic Copper Jumps to 6.50c—Tin Goes Higher—Zinc Reacts—Lead Holds Steady

New York—The tendency toward inflation continued to lend a bullish tone to most of the nonferrous metals during the past week. The dollar gained in strength during the latter part of the period but developments in Washington pointing toward the approval of President Roosevelt's program for an uplift of commodity prices and improved business activity continued a strong supporting factor.

Copper—Consumers participated in the market more actively last week and electrolytic metal moved up rapidly to 6.50c, Connecticut, the highest level since early in 1932. Buyers sought to book metal for delivery into third quarter but most sellers were unwilling to take business beyond July. Some of the large mine producers held out of the market. One asked 6.75c. The copper market probably will be placed in a much more favorable statistical position by the end of the year due to curtailment planned by many producers this summer. The Phelps Dodge Corp., one of the leading domestic interests, will cut output to 10 per cent of capacity May 1. Sales of copper and brass products increased last week although most items were marked up ½-cent. Copper wire and cable, brass ingots and scrap also were advanced.

Lead—Quotations continued firm and unchanged. Consumers came into the market for substantial tonnages for delivery as far ahead as early June. Prospects for marked improvement in the statistical position of the industry over the next few months further bolstered the market.

Zinc—Most sellers continue to ask 3.70c and 3.75c, East St. Louis, for prime western grade but some business was done on the basis of 3.65c. This easiness developed despite sharp curtailment in Tri-State ore production and a jump in prices. Buying was generally quiet during the period.

Tin—The market was generally strong last week with the level of prices well above that of the previous period. Buying of tin was fairly active. Increased activity in the tin plate trade has been taking an increased tonnage of the metal.

Antimony—Prices showed little change and buying was extremely light.

Aluminum—Remelt grades maintained the strength of the previous week. Virgin was quiet.

Sulphate Price Advanced

New York—Sulphate of ammonia has advanced $1 a ton to $23, Atlantic seaboard, shipments holding well to the recent rate. Slight improvement is noted in distillate sales. Naphthalene is moderately active Prices are firm.

Coke By-Products

Per Gallon Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.15

Quicksilver Firmer

New York—Quicksilver prices are firmer, supported by fairly active inquiry in which actual consumers are well represented. Small lots are $57 a virgin flask of 76 pounds, while round lots may be purchased at $56.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper—Electro., del. Conn.	Copper—Lake, del. Midwest	Copper—Casting, refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
April 22	6.25	6.37½	6.00	29.25	29.55	3.50	3.37½	3.75	*22.90	6.12½	35.00
April 24	6.25	6.37½	6.00	29.87½	30.12½	3.50	3.37½	3.70	*22.90	6.12½	35.00
April 25	6.50	6.62½	6.25	30.25	30.50	3.50	3.37½	3.70	*22.90	6.12½	35.00
April 26	6.50	6.62½	6.25	29.87½	30.12½	3.50	3.37½	3.70	*22.90	6.00	35.00
April 27	6.50	6.62½	6.25	29.62½	29.87½	3.50	3.37½	3.65	*22.90	6.12½	35.00
April 28	6.50	6.62½	6.25	30.12½	30.37½	3.50	3.37½	3.70	*22.90	6.25	35.00

*Nominal quotation. Market range 17.90c to 22.90c.

Pacific Coast

Bridge Steel, 187,000 Tons, to Be Closed Soon—2800 Tons of Reinforcing Bars Awarded—Northwest Sees Better Export Trade with Orient Likely as Exchange Situation Improves

San Francisco—(*By Air Mail*)—Featuring the market this week was the award of the largest reinforcing bar contract placed this year, 2800 tons for contract No. 3, anchorages for the Golden Gate bridge, San Francisco, to the Pacific Coast Steel Corp. Awards are expected to be placed next week on 187,000 tons of shapes, steel cables and reinforcing steel for the San Francisco-Oakland bridge.

Awards of reinforcing steel totaled 3059 tons, the largest for any week this year. Unnamed interest took 119 tons for highway work in Kern county, California, and 100 tons for a mausoleum at Inglewood, Calif. Blue Diamond Co. was low bidder on 500 tons for the Pine Canyon dam, Pasadena, Calif. Bids have been opened on 270 tons for three tunnels for the metropolitan water district, Los Angeles. Dinwiddie Construction Co. was low bidder on the general contract for the Bohemian club, San Francisco.

Pasadena, Calif., expects to call bids early in July for close to 8000 tons for a 38 to 42-inch welded steel pipe line, using ¼ to ⅜-inch material, for Pine Canyon dam. Bids have been opened on 100 tons for three tanks for the metropolitan water district, Los Angeles. Prices are general at 1.85c, c.i.f.

No structural awards of importance were placed. Dinwiddie Construction Co. was low on the general contract for 1500 to 1800 tons for the Bohemian club, San Francisco, and Judson-Pacific Co. was low on 550 tons of special cell work. Bids have been opened on 384 tons for three tunnels for the metropolitan water district, Los Angeles, and on 125 tons of steel forms for the Chevy Chase reservoir, Glendale, Calif.

Northwest Sees Gain

Seattle—Definite gains in various industries were noted early this week in the Pacific Northwest. Since announcement of the government's modified inflation policy, business is still more cheerful. General opinion is that exports will be stimulated. This means much to the Pacific Coast as shipments to the Orient have been restricted for months because of disparity in exchange. Exporting interests expect Japanese and Chinese buyers to show increased interest.

The Seattle plant of the Pacific Coast Steel Corp. is operating one open-hearth furnace this month, rounding out stock.

There is a slight improvement in the jobbing trade, demand for stainless steel sheets, due to the return of legal beer, being noticeable. Other items are moving in small tonnages. Both wholesale and mill prices are firm and unchanged but it is believed higher prices are inevitable soon.

While the scrap market has developed no features, higher prices will undoubtedly stimulate the movement to Japan. Oriental buyers have offered as low as $4, gross, for small miscellaneous scrap stock but dealers are fairly firm in asking $5. For scrap rails $6.50 gross is the present quotation, f.o.b. coast.

Steel in Europe

British Activity Gaining; Entente Quotas Are Set

London—(*By Radio*)—Trade in iron and steel products through the Easter holidays was quiet with home and export demand gradually increasing, and some Continental inquiries for hematite. Dorman, Long & Co. have booked some substantial contracts. Midland works are resuming after the holiday. One blast furnace stack in Shropshire has been damped. Orders for steel are scarce. The Scottish trade is unimproved and rather unpromising. Tin plate is weak but a rise is expected on account of the higher price of tin.

The Continent reports trade is absolutely quiet, with the general attitude expectant and prices firm. Germany has sold sheet bars to Japan and America. Export quotas for member countries of the steel entente are: Belgium, 29 per cent; France, 21 per cent; Germany, 28 per cent; Luxemburg, 22 per cent. No figure has been announced for the Saar basin separately.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 27

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON		£ s d		£ s d — £ s d
Foundry, 2.50-3.00 Silicon	$10.91	2 18 6	$8.27	1 14 0
Basic bessemer	10.07	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	11.00	2 19 0	....	.....
SEMIFINISHED STEEL				
Billets	$18.65	5 0 0	$10.71 to $10.95	2 4 0 to 2 5 0
Wire rods, No. 5 gage	27.98	7 10 0	$21.90	4 10 0
FINISHED STEEL				
Standard rails	$28.91	7 15 0	$26.77	5 10 0
Merchant bars	1.09c	6 10 0	.58c	2 12 6
Structural shapes	1.23c	7 7 6	.52c	2 7 0
Plates, †¼ in. or 5 mm	1.42c	8 10 0	.80c	3 12 6
Sheets, black, 24 gage or 0.5 mm.	1.42c	8 10 0	1.29c	5 17 6
Sheets, gal., 24 gage, corr.	1.75c	10 10 0	1.49c	6 15 0
Bands and strips	1.29c	7 15 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.46c	8 15 0	1.18c	5 7 6
Galvanized wire, base	1.75c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.00c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 2.94	0 15 9	.....	.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$11.66	3 2 6*	$ 8.66	200	$ 8.90	240	$17.46	69
Basic bessemer pig iron	11.00	2 19 0*	7.36	170	6.75	220	19.10	75.50
Furnace coke	2.47	0 13 3	5.20	120	3.38	110	4.87	19.25
Billets	18.65	5 0 0	16.02	370	11.51	375	24.41	96.50
Standard rails	1.38c	8 5 0	1.39c	697	1.61c	1,150	1.52c	132
Merchant bars	1.13c	6 15 0	1.06c	530	.70c	500	1.27c	110
Structural shapes	1.46c	8 15 0	1.10c	550	.70c	500	1.24c	107.50
Plates, †¼-in. or 5 mm	1.46c	8 15 0	1.36c	680	.91c	650	1.46c	127
Sheets, black	1.59c	9 10 0§	1.70c	850‡	.98c	700‡	1.66c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.96c	11 15 0	2.80c	1,400	1.96c	1,400	4.26c	370
Plain wire	1.46c	8 15 0	2.26c	1,130	1.82c	1,300	2.04c	177
Bands and strips	1.59c	9 10 0	1.00c	500	.95c	675	1.46c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.
(a) dd. Middlebrough

Mirrors of Motordom

(*Concluded from Page* 21)

erally regarded as having no superior either in fair-dealing or astuteness, maintains that an inventory of raw materials does not pay unless it earns 30 per cent. In other words, interest, handling and other charges are such that there is no economy in speculating unless the market on material costing $30 per ton today has advanced to $34.50 or higher in six months.

It appears almost paradoxical, but after waiting three years for a really brisk market, district sales managers are exceedingly cautious in extending credits and are scanning the standing of every buyer. In view of the banking situation, a financial statement is regarded as valueless unless carefully analyzed.

Take the case of a typical Michigan partsmaker. A substantial portion of the listing of cash was admitted to be in Michigan banks now in the hands of conservators. Over half of his accounts receivable represented items due from the two large automobile companies now in receivership. Thus, what appeared to be a satisfactory statement melted away rapidly.

Who's Who in Car Buyers

Chrysler has compared automobile purchases of various occupational groups for 1929 and 1932. Hardest hit in 1932 were building trade mechanics, whose purchases, on the basis of 1929 equalling 100, were only 16 for masons and 18 for carpenters. Next lowest were ranchers and farmers, rated at 25. Barbers, painters, plumbers and electricians all averaged 45 each, stockbrokers 57, professional people (doctors, dentists, clergymen etc.) 85, undertakers 86, and highest of all were public employes, including teachers government workers, policemen and firemen, soldiers and sailors, who rated 166, or 66 per cent higher than in 1929.

English automobile manufacturers felt "set up" recently when they broke all records by assembling 6000 cars in one week, or at the rate of 25,000 a month. The alltime American monthly record is 621,910, made in April, 1929. For a fair comparison, it must be remembered that the population of the United States is triple that of Great Britain. Several British manufacturers of popular-price cars are reported to be prospecting an invasion of the American market, something only Austin and Rolls-Royce have attempted in recent years.

One result of the Studebaker receivership is a divorce of White and Studebaker truck sales activity, White practically returning to its pre-merger status . . . . Henry Ford has organized farmers at Belleville, Mich., into the Washtenaw Co-operative Industries, on the basis of a monthly salary of $52 and a split, at the end of the season, of the profit from 5800 acres . . . . In his efforts to stimulate sales of Italian automobiles Mussolini is offering government employes a plan including no down payment, monthly installments over 5 years, a free driver's license . . . . Kelsey-Hayes Wheel Corp. has closed its Jackson, Mich., plant and moved the equipment to Detroit.

Foundrymen To Hear Results Of Further Research Work

(*Concluded from Page* 34)

Laval Separator Co., Poughkeepsie, N. Y.

"High-Test Iron in the Electric Furnace," by C. R. Culling, Carondelet Foundry Co., St. Louis.

"Air Furnace Cast Iron," by D. P. Forbes, Gunite Corp., Rockford, Ill.

Steel Founding

"Molybdenum," by H. W. Gillett and J. L. Gregg, Battelle Memorial institute, Columbus, O.

"Chromium," by J. H. Critchett, Union Carbide & Carbon Co., New York.

"Nickel," by A. G. Zima, International Nickel Co. Inc., New York.

Malleable Iron

"Sand Control on a Continuous Molding System," by Charles Morrison, Saginaw Malleable Iron division, General Motors Corp., Saginaw, Mich.

"The Effects of Superheat on the Annealing of Malleable Iron," by A. E. White and R. Schneidewind, University of Michigan, Ann Arbor, Mich.

"High-Strength Wear-Resistant Malleable Iron," by Rebecca Hall, Chicago.

Roundtable Luncheon Conference

"Vanadium," by Jerome Strauss, Vanadium Corp. of America, Bridgeville, Pa.

"Coreless Induction Furnace Operation," by W. E. McKibben, General Electric Co., Schenectady, N. Y.

Thursday, June 22

MORNING

Steel Founding

"Studies on Solidification and Contraction and Their Relation to the Formation of Hot Tears in Steel Castings," by C. W. Briggs and R. A. Gezelius, Naval Research Laboratory, Washington.

"Dynamic Properties of Steel Castings as Determined by the Impact Test," by Fred Grotts, Continental Roll & Steel Foundry Co., East Chicago, Ind.

"Advantages to Foundrymen of Radiographic Inspection," by C. Isenburger, St. John X-Ray Corp., New York.

Cast Iron

"Sea Coal Effects on Sands," by Ben Hird, Institute of British Foundrymen.

"Effect of Slag on Cupola Operation and Metal Structure," by R. H. Bancroft and A. C. Meyer, Perfect Circle Co., Newcastle, Ind.

"Titanium in Cast Iron," by G. F. Comstock, Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

"High-Silicon Heat-Resisting Cast Iron," by A. L. Norbury and H. H. Morgan, British Cast Iron Research association.

"Martensitic Quenching of Cast Iron," by M. Delbart, French Foundry Technical association.

Friday, June 23

MORNING

Cast Iron Tests and Specifications—Joint Meeting with American Society for Testing Materials

"Significance of Testing Cast Iron and Limitations of Testing," by H. Bornstein, Deere & Co., Moline, Ill.

"Correlation of Test Bar and Casting; and Transverse and Tensile Tests, Modulus of Elasticity, Fatigue and Impact Tests," by R. S. MacPherran, Allis Chalmers Mfg. Co., Milwaukee.

"A.S.T.M. Specification A48-32T," by J. W. Bolton, Lunkenheimer Co., Cincinnati.

"Mechanism of Testing; and Factors in Production of Test Bars," by J. T. Mackenzie, American Cast Iron Pipe Co., Birmingham, Ala.

"Value of Hardness Testing for Control of Product; and Wear and Machinability Tests," by A. L. Boegehold, General Motors Research Laboratory, Detroit.

Materials Handling—Joint Meeting with Materials Handling Division of American Society of Mechanical Engineers

"The Field of Materials Handling in Small Foundries," by Max Amos, Standard Automotive Parts Co., Muskegon, Mich.

"The Field of Materials Handling in Semiproduction Foundries," by W. L. Seelbach, Forest City Foundries Co., Cleveland.

Shop courses dealing with various foundry problems will be held at 8:30 a.m. each day except Monday.

Plan Pensacola Plants

Laurence S. Wilder, former president ,New York Shipbuilding Co., New York, said recently a group of engineers and financiers will seek $30,000,000 loan from the Reconstruction Finance Corp. for construction of industrial plants at Pensacola, Fla., some of which would consume steel produced in the Birmingham, Ala., district. Mr. Wilder's organization is called Gulf Industries Inc. Harvey W. Corbett, New York architect, is associated with him.

Canadian Hardware Total Off

Production of hardware and tool industry in Canada in 1931 was valued at $13,271,113, compared with $21,474,155 in 1930. The number of plants was 134, capital, $29,988,116; employes, 4998; salaries and wages, $5,220,870; and cost of raw materials, $4,156,374.

Here and There In Industry

(*Concluded from Page* 52)

tools. D. C. Arbuthnot is president, Roy Rose vice president, W. Guerin treasurer and R. V. Jensen manager.

□ □ □

Mills Co., Cleveland, manufacturer of metal partitions, has appointed George C. Cossaboom its factory representative for Detroit and vicinity. His company, Building Accessories Co., 199 Tennyson avenue, Detroit, will be continued, the Mills representation to be carried on in connection with the company's activities.

□ □ □

Ashmore, Benson, Pease & Co., Ltd., Stockton-on-Tees, England, British sales representative for Steel Industries Engineering Corp.; Pittsburgh, recently received an order for a second electric rotary clay gun from the Appleby Iron Co., Scunthorpe, Lines, England.

□ □ □

Davis & Thompson Co., 6619 West Mitchell street, West Allis, Milwaukee, manufacturing high speed automotive tools and machinery, has acquired the Planigressive Reducer Co., 2737 South Twenty-eighth street, Milwaukee, and is transferring production of the gear-reducing equipment to its main plant.

□ □ □

Mullins Mfg. Co., Salem, O., C. C. Gibson president, found business the first three weeks in April about 25 per cent higher than the corresponding period in March. The refrigerator department is at 35 per cent of capacity, double the rate of a month ago.

□ □ □

Paul F. Hermann Co., 1910 Beechwood boulevard, Pittsburgh, has been made representative for the Federal Products Corp., Providence, R. I., on precision dial indicators and gages. The Hermann company also represents the O. K. Tool Co. Inc., Shelton, Conn., and Thomas Prosser & Son, New York.

□ □ □

King Co., Sheffield, Ala., manufacturer of lighting standards and metal moldings, has booked an order for 700 tons of moldings for a hospital in Kentucky, sufficient to keep 120 workmen busy six months. An order also has been received for boulevard lighting standards for Los Angeles. George King is vice president.

□ □ □

Hickman-Williams & Co., formerly on the sixteenth floor, Oliver building, Pittsburgh, are now located on the nineteenth floor, Clark building, Pittsburgh. Telephone numbers are unchanged.

□ □ □

Jones & Laughlin Steel Corp., Pittsburgh, has launched the second of two all-welded steel tank barges for the Producers Pipe Line Co., Louisville, Ky., at its South Side ways, Pittsburgh, on the Monongahela river.

□ □ □

Northern Equipment Co., Erie, Pa., has appointed George W. Neale, 504 East Lafayette street, Tampa, Fla., its district representative for the state of Florida except for Jefferson county and counties west for the sale of feed water regulators, differential valves, pump governors and allied equipment.

□ □ □

Seneca Falls Machine Co., Seneca Falls, N. Y., has appointed the Cadillac Machinery Co., Fisher building, Detroit, its exclusive representative in the Detroit district for its lathes and automatic loading devices. W. H. Nettle, former western sales manager for the Seneca Falls Machine Co. is now connected with the Cadillac Machinery Co.

□ □ □

General Electric Co., Schenectady, N. Y., will portray the progress in science and industry during the last century at its "House of Magic" exhibit at the Century of Progress exposition, in Chicago, beginning June 1. In a small auditorium seating 300 persons, General Electric will present brilliant lighting effects, a wave of a wand will open exits, a push on a button will bring into sight a thyratron organ no bigger than a toy piano but capable of producing the sound volume of the largest pipe organs. The auditorium will be air-conditioned, and will give an all-day series of 30-minute shows.

□ □ □

Biggs Boiler Works Co., Akron, O., has taken an order from the Union Pacific railroad for two creosoting retorts, 7 feet in diameter and 132 feet long and two cylinders 6 feet in diameter and 110 feet long, to be shipped to Portland, Oreg., replacing part of a plant recently burned. This shop has government work and brewery tank contracts to insure operation for several months.

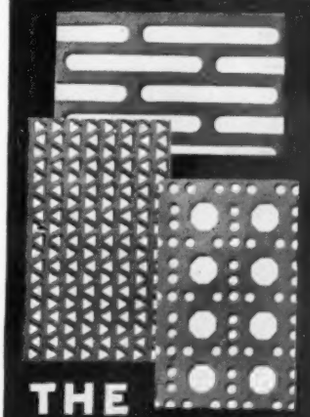
□ □ □

Decatur Iron & Steel Co., Decatur, Ala., has been awarded the ornamental iron for the first national United States narcotic farm at Lexington, Ky. The company has contracts for ornamental iron and bronze for numerous postoffice buildings and army barracks and structural steel for the postoffice at Columbus, Ga., and memorial building at Dickson, Tenn. These contracts total more than $200,000.

□ □ □

Whitcomb Locomotive Co., Rochelle, Ill., subsidiary of the Baldwin Locomotive Works, Philadelphia, has been awarded by the metropolitan water district of Southern California a contract for twelve 8-ton electric storage battery locomotives for use in construction of the Coachella tunnels, in California. Delivery will be made within about three months without substantial increase in personnel or facilities.

PERFORATED METAL



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New Jersey

JERSEY CITY, N. J.—Increased sales of its welding electrodes has caused the American Murex Corp. to put its plant in seven-day operation.

RARITAN, N. J.—Metropolitan Cement Co., W. D. Cloos, 261 Fifth avenue, is receiving bids for construction and equipment for a cement plant on Meadow road, altering present potash plant and making addition. Cost is estimated at about $500,000.

Pennsylvania

NEW CASTLE, PA.—Simplex Battery Co., E. D. Hawk general manager, will rebuild its burned plant at once to avoid long interruption of production.

PITTSBURGH—Chief of army engineers has recommended expenditure of $12,200,000 for improvements in the Big Kanawha and Ohio rivers, including a roller-type dam in the Ohio river 13 miles below the mouth of the Big Kanawha river, at Gallipolis, O.

Ohio

ALLIANCE, O.—Bids will be received until May 5 by the supervising architect of the treasury for new brass piping for the post office here.

Michigan

BATTLE CREEK, MICH.—Battle Creek Ice & Cold Storage Co. will build an addition and make alterations to its warehouse, remodeling the entire plant into a brewery at a cost of $70,000.

BAY CITY, MICH.—Hirschfield Pipe Reclamation Co. has been incorporated with 200 shares no par value to manufacture pipe, castings and fittings, by Joseph C. Hirschfield, 1414 North Madison avenue, Bay City, Mich.

CHEBOYGAN, MICH.—J. B. Lund's Sons foundry, damaged by fire about a year ago, is being rebuilt and is expected to be ready for production about June 1.

DETROIT—Detroit Wire Die Co., 17360 Lasher avenue, has been incorporated with $1000 capital to manufacture wire dies, by William L. Brown, 16771 Paton avenue, Detroit.

FLINT, MICH.—Dailey Liquid Malt Co. is having plans made by G. Mueller, architect, Detroit, for alterations to a building in Flint for use as a brewery. Equipment will be needed.

GRAND RAPIDS, MICH.—West Side Brewing Co. is having plans drawn by Don Lakie, Grand Rapids, architect, for a plant estimated to cost $150,000.

PONTIAC, MICH.—Precious Metals Refining Works Inc., 82 Perkins street, has been incorporated with 1000 shares no par value to manufacture precious metals and alloys, by Charles A. Nisbett, 170 Whittemore street, Pontiac, Mich.

SAGINAW, MICH.—Michigan Sugar Co. will remodel its refinery at Owosso, Mich., adding further equipment, entire project to cost $75,000.

Illinois

CHICAGO—Eddy Iron Foundry Co., 373 West Grand avenue, has been incorporated with 80 shares no par value to operate an iron foundry and machine shop, by William K. and Walter W. Fritze and Oscar M. Lange. Charles Cooley, 160 North LaSalle Street, is correspondent.

CHICAGO—Cooper McGurk Stewart Inc. has been incorporated with $20,000 capital to manufacture electrical equipment, by Thomas I. Underwood and associates. Winston, Strawn & Shaw, First National Bank building, are correspondents.

HARVEY, ILL.—Assets of the S. Ward Hamilton Co. will be sold May 3 at bankrupt auction by Michael Tauber & Co. The company manufactured metal specialties and equipment includes punch presses, shapers, lathes, grinders and similar machines, factory equipment and small tools.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids as follows: May 2, schedule 9954, one gasoline-operated truck crane for New York; schedule 9918, one gasoline engine-driven, self-propelled crane with swinging boom, for Pensacola, Fla.; schedule 9937, six complete lubricating oil pumps, for Brooklyn, N. Y.; May 9, schedule 9969, 8850 steel packing boxes for smokeless powder, for White Plains, Md.

ALBEMARLE, N. C.—E. C. Miller Foundry and its machine shop have been practically destroyed by fire.

Wisconsin

MARINETTE, WIS.—Menominee-Marinette Brewing Co. is taking bids for remodeling its plant at 1417 Sheridan road, Menominee, at cost of about $50,000. Walter E. Henes is president.

MILWAUKEE—Wisconsin Motor Co., 1910 South Fifty-third street, has reorganized under the name of Wisconsin Motor Corp., retaining its present management. Hugo W. Schnetzky is president.

MILWAUKEE—Fuller-Warren Co., stove manufacturer, has increased production close to capacity with 150 men at longer hours, on orders mostly from middle western states.

MILWAUKEE—Johnson City Foundry & Machine Co., Johnson City, Tenn., is low bidder at $2800 for furnishing the government lighthouse district office here with one cast iron lantern house for North Manitou shoal light. The highest bid was $6942.

MILWAUKEE—Milwaukee board of harbor commissioners has awarded a contract to the American Hoist & Derrick Co. at $21,270 for furnishing and installing two gas-powered semi-portal, straight-line gantry cranes to service the new outer harbor transit shed. Harnischfeger Sales Corp. has been given a contract to recondition and install two used cranes bought by the commission last fall at $13,840.

MILWAUKEE—Main building of the South Side Malleable Casting Co., 2700 South Nineteenth street, was burned recently. The building, 450 feet long, was wrecked and equipment severely damaged. The plant was idle. Rebuilding has not been decided on, pending insurance adjustment. Walter W. Lange is president and general manager.

MILWAUKEE — Plans are being drawn by government engineers for a power plant to cost $135,000 at the Milwaukee veterans' hospital and home. It will replace a plant of which the first unit was built 60 years ago. Charles M. Pearsall is commandant. Work will start about May 1.

MILWAUKEE—City council has authorized commissioner of public works to build and equip a $50,000 waterworks booster station in the Menomonee valley without competitive bidding. Contract for pumps, about $25,000, is expected to go to Allis-Chalmers Mfg. Co., West Allis, Wis.

SUPERIOR, WIS.—Northern Brewing Co. is rehabilitating its plant at Eighth street and Fisher avenue at cost of about $50,000. Louis McKinnon is secretary.

New Mexico

ARTESIA, N. MEX.—Transport Refining Co. will build a 32-mile pipe line from the San Juan basin oil field to Prewitt, N. Mex., where it is building a refinery. Most of equipment will come from a dismantled plant in Wyoming. T. D. Boyce is superintendent in charge.

Utah

SALT LAKE CITY, UTAH—M. I. Thompson, 162 South Main street, and associates, have started initiative proceedings looking to issue of $18,000,000 power bonds for construction or purchase of a municipal electric light and power plant.

Pacific Coast

BERKELEY, CALIF. — Tuttle Welding & Mfg. Co., A Tuttle owner, has leased 1500 square feet of floor space at 1824 San Pablo avenue. Welding jobbing and the manufacture of deep well strainers for pumps will be undertaken.

ASTORIA, OREG.—Construction of the four-mile steel bridge from here to Point Ellice, Oreg., across the Columbia river, awaits decision of the Reconstruction Finance Corp. on making a loan of $6,000,000 toward the $7,000,000 required for its construction. G. B. Herington, consulting engineer, Multnomah hotel, Portland, is working with Steinman & Robinson, New York, on plans and specifications. A 1300-foot span with 200 feet clearance and a 250-foot double bascule opening 70 feet above water are included in the structure.